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6. AUTHOR(S)

Peter Barnes, John Steffey

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

US Army TRADOC Analysis Center - Fort Lee  
ATTN: ATRC-L  
Fort Lee, VA 23801-1511

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13. ABSTRACT (Maximum 200 words)

In 1995, TRADOC initiated the analytical process described in the March 1995 draft Joint Venture (JV) Campaign Plan. The resulting analyses provide the basis for redesigning today's Warfighting Army for the 21st century. The combat unit elements, combat service elements, and the combat service support elements needed to be analyzed individually to determine whether or not each of these sections would be able to effectively perform under the given scenario conditions. TRAC-Lee was tasked to analyze the CSS capabilities of the three (3) division designs (Conservative Heavy, Strike, Brigadist) for DDA Phase III. The three division designs were dynamically gamed using the Vector-in-Commander model in the LANTICA III, Northeast Asia 2.0, and Southwest Asia 4.2 scenarios. The CSS elements represented in VIC were analyzed by TRAC-Lee with the primary focus of the analysis was on the maintenance and supply operations and how the CSS units functioned for the given scenario.

This analysis concluded that the CSS structure in the Brigadist Division can support the division during a 48-hour battle such as the one portrayed in the LANTICA III scenario. There were a few problem areas in the CSS elements that were focused on in this analysis. The recovery operations of the M88 recovery vehicles were inadequate to handle the workload produce during the scenario, the mechanics at the DBSC could not repair the damaged vehicles at this unit in a timely fashion, and some of the artillery units used all of their ammunition reserves and were not resupplied in a timely manner.

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## GIST

**STUDY TITLE:** Combat Service Support (CSS) Vector-in-Commander (VIC) Analysis in Support of Force XXI Analyses Division Design Analysis – Phase III CSS Analysis of VIC Dynamic Gaming Brigadist Division Interim Design (LANTICA III)

**PURPOSE:** The purpose of this analysis was to produce quantitative analysis of the Brigadist Division Interim Design's combat service support (CSS) structure which was dynamically gamed in the LANTICA III scenario with the VIC model. The focus of the analysis was on the maintenance and supply operations and how the CSS units functioned for the given scenario.

**MAIN ASSUMPTIONS:** The principal assumptions of this study include: (a) all repair parts were available upon request, (b) Echelons-Above-Division (EAD) were fully resourced, and (c) CSS enablers and other technological equipment are present.

**PRINCIPAL FINDINGS:** The CSS structure in the Brigadist Division could support the division during the 48-hour battle in the LANTICA III scenario with a three of exceptions. The number of M88 recovery vehicles were inadequate to handle the workload generated by the scenario, the mechanics supporting the DBSC could not repair the damaged vehicles at this unit in a timely fashion, and several artillery units expended all of their ammunition resources at some time during the scenario and could not be resupplied in a timely manner.

**IMPACT:** This report suggests that the CSS structure in the Brigadist Division is sufficient to sustain the division in a scenario such as the one portrayed in LANTICA III.

**STUDY DIRECTORS AND STUDY AGENCY:** Peter Barnes, TRADOC Analysis Center, Ft Lee, VA (DSN 539-1809, COM 804-765-1809, FAX 804-765-1456), John Steffey, TRADOC Analysis Center, Ft Lee, VA (DSN 539-1831, COM 804-765-1831, FAX 804-765-1456).

**STUDY SPONSOR AND SPONSOR POC:** TRADOC Analysis Center, Antoniette McGrady, DSN 539-1826, COM 804-765-1826.

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## SECURITY CHECKLIST

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Division Design Analysis -- Phase III CSS Analysis of VIC  
Dynamic Gaming Brigadist Division Interim Design  
(LANTICA III).  
Technical Report



Prepared by:

*Peter Barnes*  
PETER BARNES  
ORA, TRAC-LEE

*John Steffey*  
JOHN STEFFEY  
ORA, TRAC-LEE

Certified by:

*Gerald A. Klopp*  
GERALD A. KLOPP  
Director, TRAC-LEE



Combat Service Support (CSS)  
Vector-in-Commander (VIC) Analysis  
in Support of Force XXI Analyses

Division Design Analysis -- Phase III  
CSS Analysis of VIC Dynamic Gaming  
BRIGADIST Division Interim Design (LANTICA III)  
30Sep97 VIC Analysis Data

**1. General.**

a. The Commanding General (CG) Training and Doctrine Command (TRADOC) tasked the TRADOC Analysis Center (TRAC) to conduct an analysis of the Combat Service Support (CSS) Division redesign concept. TRAC at Fort Lee, Virginia (TRAC-LEE) used Vector-in-Commander (VIC) analysis to provide quantitative analysis of that concept.

b. The dynamic gaming with the VIC model is based on the LANTICA III scenario with a total duration of 48 hours incremented in four hour time periods (TP) and one (1) hour reorder cycle time between CSS units. The modeled force consists of three brigades with corps support. Specific descriptions and details for both the scenario and modeled force are provided in the main report.

c. The analysis focuses first on those key maneuver unit resources necessary for a unit to perform its designated mission. The specific resources addressed are weapon system availability and the timely availability of supplies. Secondly, various aspects of the CSS system are examined to isolate bottlenecks or shortages which limit the provision of needed services. And conversely, excesses or under-utilized CSS resources are identified for this scenario.

d. The analysis entails two major areas: maintenance support and supply support. Since the medical support system for the treatment of personnel is very similar in function to that of the maintenance system, medical support is addressed along with maintenance.

e. VIC unit name designators are used in this report for brevity. Appendix A shows the cross reference between actual unit names and VIC unit names.

**2. Model Description.**

a. The Vector-in-Commander (VIC) model is a two-sided, deterministic simulation of integrated land and air combat. The level of resolution is the maneuver battalion. As a deterministic model, VIC relies upon expected values; weapon systems, transporters, inventories/stockage levels, and consumption can be fractional values. VIC is event stepped for maneuver elements and both time stepped and event stepped for calculation of combat service support (CSS) effects. The combat and combat support (CS) functions in VIC produce a workload for the CSS system. Two key modules within VIC are used to represent the CSS system: Return to Duty (RD - maintenance) and Logistics (LO - supply).

b. The return-to-duty (RD) module operates on equipment and noncrew personnel, both of which are referred to as systems, as well as crews for key combat vehicles.

(1) Workloads. The attrition modules generate combat casualty workload in the form of combat-damaged systems. These quantities are adjusted to factor out catastrophic damage/killed in action (KIA) and abandonments (equipment only) before becoming a workload on the RD system. Reliability failures to equipment and disease and nonbattle injury (DNBI) to personnel are also generated, resulting in their removal from units and their introduction as workload upon the RD system.

(2) Processes. The RD module contains representations of the recovery, evacuation, and repair functions.

(a) Recovery is constrained by the availability of operational recovery vehicles. Recovery operations are represented as a delay time of 57 to 96 minutes which includes round trip travel, hook-up, and drop-off. The recovery time varies from vehicle to vehicle and the primary location of that vehicle.

(b) Evacuation is constrained by the availability of operational evacuation vehicles and dynamic evacuation times that are a function of distance and time on the main supply route (MSR) network.

(c) Repair is constrained by the available strength and type of assigned mechanics or medical personnel. Of course repair throughput is impacted by the 'time to repair' but repair time is determined by design factors and not CSS. A maintenance unit's maintenance man-hours (MMH) is degraded by fifty percent when that unit has to relocate on the battlefield. This degradation is calculated to the nearest quarter of an hour; therefore, a maintenance unit's MMH during a portion of a TP could be degraded while the remaining MMH are unaffected. The degradation of MMH availability is based on the premise that a maintenance facility will only have 50 percent of its assets (to include personnel) fully functioning at any time during a battlefield relocation.

(3) Products. The final product of the RD module is the return of crewed systems to owning units. Intermediate products of the various RD processes include recovered systems, evacuated systems, and repaired systems.

(4) Combat impacts on RD processes. Impacts include attrition of RD assets, productivity degradation due to unit movement, changes in evacuation distances due to unit movements, and changes in evacuation speeds due to congestion of MSR links.

c. The logistics (LO) module provides the support structure to facilitate the resupply of ammunition, fuel, and other supplies to maneuver units and the restocking of these supplies at supply units.

(1) Workloads. The attrition modules dynamically generate the workload for ammunition as units engage in conflict. As units move and change posture they create a workload for fuel. A workload for other supplies is generated by a daily consumption rate, depending upon unit types. When maneuver units deplete their basic loads to specified reorder levels, a requirement for resupply is levied on the CSS system.

(2) Processes. The LO module contains representation of the resupply and move functions. Resupply to maneuver units is constrained by the availability of resupply vehicles, availability of supplies at supply units, load times, and travel time between the unit and its supplier. The availability of supplies at supply points is constrained by transportation, availability of load facilities, and load/unload times. The move function is

constrained by the availability of CSS trucks, congestion of the MSRs, and travel times between supply units.

(3) Products. The final product for the resupply and distribution system is the replenishment of expended ammunition, fuel, and other supplies to maneuver units. Intermediate products include the restocking of resupply units and the movement of supplies along the MSRs from higher echelon supply units.

(4) Combat impacts on IO processes. Attrition and movement of supply units as a result of combat effects degrade the ability of these units to perform their resupply function. Resources which can be lost at the supply units include resupply vehicles, stocks, and materiel-handling equipment (MHE). The relocation of supply units results in degradation of their receipt/issue capability during the move. In addition, attrition of resupply vehicles, both at the maneuver unit and along the MSRs, degrades the ability of the CSS system to deliver supplies.

### **3. Assumptions.**

a. Maintenance characteristics and parameters of all systems remain constant across the scenario.

b. When damaged weapon systems reach a maintenance facility, the correct tools, parts, and equipment are present at the facility. If the number of mechanics necessary to work on the damaged weapon system is available, they will begin working on the damaged weapon system immediately (i.e., prep time and time spent for damage assessment are not played in the model).

c. The DNBI rate remains constant across the scenario.

d. Resupply of all stockage items is available from echelons above corps (EAC).

### **4. Sufficiency Criteria.**

a. Equipment. Maintain 80 percent availability of systems that have not been destroyed or abandoned. Rationale: Army Regulation (AR) 220-1, Unit Readiness Reporting, defines an equipment availability status of 80-90 percent as category C2 which is fully combat ready with minor risk.

b. Personnel.

(1) Have no weapon systems in awaiting-reissue queue due to nonavailability of crews. Rationale: The availability of weapon systems crews affects the availability criterion for combat systems.

(2) Maintain 80 percent personnel strength level for all modeled personnel. Rationale: AR 200-1 defines a personnel strength level of 80-90 percent as category C2 which is combat ready with minor risk.

c. Supply. Have no zero balance of any supply-class subitem (e.g., 155mm, 120mm, POL). Rationale: The lack of a specific type could adversely affect tactical options.

### **5. Maintenance Analysis.**

a. The six weapon system categories covered in this analysis are shown in table M-1. The Fixed Wing category was not represented in the CSS system.

In addition, medical treatment of personnel and weapon crews is presented as a separate category.

Category	Weapon System
TANK	M1A2
AFV	IFV/TOW FSV/45MM SFV/STINGER
ADA	AVENGER
MLRS	MLRS_D
CANNON	CRUSADER-D
HELICOPTERS	AH64D RAH66D

Key Weapon Categories  
Table M-1

b.. The primary maintenance performance measure at the maneuver unit level is availability of unit weapon systems. Availability of unit weapon systems is determined by the current strength of weapon systems at a maneuver unit versus the initial strength less the number of catastrophically killed weapon systems at the same maneuver unit. The number of weapon systems available is a function of many dependent and interdependent factors. These factors can be partitioned into two groups: (1) those factors which render weapon systems inoperable: combat damage and reliability and (2) factors that contribute to the return of repaired systems to combat. When more weapon systems are returned to combat, a larger population is available for combat and reliability failure, which in turn workloads the Return-to-Combat (RTC) support system.

(1) Factors which cause weapon systems to become inoperable are combat damage and reliability failures. Combat damage is a function of the interaction of opposing forces resulting in catastrophic kills and repairable battle damage. The percentage of catastrophic kills versus the percentage of repairables varies by weapon system due to threat weapons and survivability characteristics. Table M-2 shows the percent repairable for each system once combat damaged. The percentages are not measures of overall survivability but are conditional results based on a weapon system first being combat damaged. Overall survivability also involves the likelihood of a weapon system being acquired and then being hit by the enemy. The percentages in table M-2 are, therefore, predicated on the occurrence of these two events.

Category	Weapon System
M1A2	93
IFV/TOW	83
FSV/45MM	83
SFV/STINGER	83
AVENGER	69
MLRS_D	71
CRUSADER-D	49
AH64D	41
RAH66D	41

Percent Repairable by Weapon  
Table M-2

(2) Permanent losses of operational systems can occur in several ways. The most frequent is usually due to catastrophic combat damage. In addition, both types of candidate repairables (combat and reliability) are

subject to weapon system abandonment at the maneuver unit or maintenance unit level. Maneuver and maintenance unit abandonment's of weapon systems occur due to immediate war-fight conditions, thus becoming permanent losses like catastrophic kills (no systems were lost due to maintenance unit abandonments). Weapon systems can be traveling on an MSR when the scenario ends; thus these weapon systems are not considered part of a combat unit's arsenal. Another key factor which affects availability is the nonavailability of an owning unit. This occurs when a maintenance unit has repaired systems but does not have a maneuver unit in its area of influence with authorization to accept the system. In some cases, such weapons are never reissued during the scenario. Crewed weapon systems' RTC may be delayed because the appropriate number of crew members are not available to operate the weapon system. All five of these factors (catastrophic damage, abandonments, currently being reissued, unit non-availability, and weapon systems waiting crews) are independent of the CSS system performance. Table M-3 shows the number of systems for each of these categories at the end of the scenario.

Weapon	# Weapons Waiting Units	# Weapons Waiting Crews	# Weapons Being Reissued	Maneuver Unit Abandonments	Catastrophic Kills	Total
M1A2	0	0	0	2.1	3.2	5.3
IFV/TOW	0.0	0.0	0.0	2.9	15.9	18.8
FSV/45MM	0.0	0.0	0.0	0.0	6.7	6.7
SFV/STINGER	1.0	0.0	0.0	1.3	2.5	4.8
AVENGER	4.2	Not crewed	0	0	2.3	6.5
MLRS_D	0	0	0	0.0	0.2	0.2
CRUSADER-D	0	0	0	0.0	6.4	6.4
AH64D	0.0	0.0	0.0	0.0	0.5	0.5
RAH66D	0.0	0.0	0.0	0.0	7.4	7.4
Total	5.2	0	0	6.3	45.1	

Weapon System Losses  
Table M-3

(3) Reliability failures are based on mean hours between failures (MHBf) for the major subsystems of each weapon. The major subsystems for this study are Automotive, Armament, Helicopter, and Medical. Of course, the subsystems that fail or are damaged vary by weapon systems (e.g., the M1A2 is composed of both subsystems, automotive and armament, while only automotive is represented for the heavy equipment transporter (HET)). Each subsystem is serviced by a different mechanic type. In addition, the MHBf can vary by subsystem for each weapon. Helicopters, for this analysis, are serviced by a single type master mechanic although both automotive and armament failures occur for helicopters. In addition, all wounded/DNBI personnel are treated by a single medical type. The availability and performance of trucks used for resupply is addressed in the supply section of the report.

(4) Factors which influence the RTC of weapon systems are recovery, evacuation, and repair (to include medical treatment of personnel and crews) resources. Each of the CSS resources which performs these services is subject to both combat damage and reliability failure, which determine their availability for weapon system processing and treatment of personnel. Recovery and evacuation are performed on a designated priority basis, while repair and treatment are based on a more complex priority system. Further complicating the impact of repair on weapon system RTC are the repair characteristics of individual weapon systems. These characteristics vary by level of repair (i.e., unit, direct support (DS), general support (GS)), and mean time to repair for each type repair (combat, reliability). These characteristics represent a very complex interrelated system which determines the number of operational weapon systems.

c. Analysis. The maintenance analysis is divided into three sections (Support Services Sufficiency, Key Weapon Availability, and CSS Workloads):

(1) Support Services Sufficiency.

(a) Recovery - Weapons.

1 With three exceptions, recovery operations serviced the recovery workload in a timely manner. "Timely manner" is defined as servicing the recovery workload within two TPs for a given maintenance unit. To meet this criterion the recovery workload at the end of one TP must be serviced in the next time period. The reason for this explanation of "timely manner" is to account for the maximum time of 96 minutes it takes for a recovery vehicle to assist in the recovery of a damaged weapon system or vehicle. If a vehicle requires an assisted recovery during the last half of the current TP, that vehicle would not reach the designated maintenance area until the next TP. The two recovery vehicles modeled are the improved recovery vehicle (M88) and a generic recovery vehicle (HMTWRECKER) which represent all other recovery vehicles which are not M88s. Table M-4 provides an overview of both recovery vehicle's status for the scenario where:

Initial Strength (stgn) is the assigned density at the start of the scenario.

End Strength (stgn) is the number operational at the end of the scenario.

End Availability is the percentage of initial strength available less the number destroyed or abandoned at the end of the scenario.

M88				HMTWRECKER			
Unit ID	Initial Stgn	End Stgn	End Availability	Unit ID	Initial Stgn	End Stgn	End Availability
B000000	10	9.2	92	B000000	10	10	100
B20000H	1	0.9	92	B20000H	1	1	100
B2000AR	1	0.1	11	B2000AR	4	0.4	9
B20020H	1	0.8	82	B20020H	1	1	100
B200AH2	1	0.9	87	B200AH2	1	1	100
B200BH2	1	0.9	87	B200BH2	1	1	100
B200CH2	1	0.8	84	B200CH2	1	1	97
B200DH2	1	0.9	87	B200DH2	1	1	100
B200EH2	1	0.9	87	B200EH2	1	1	100
B200FH2	1	0.9	87	B200FH2	1	1	100
B200JH2	1	0.9	87	B200GM2	1	1	100
B200KH2	1	0.9	87	B200JH2	1	1	100
B200LH2	1	0.3	31	B200KH2	1	1	100
B2010MX	2	1.9	96	B200LH2	1	0.9	87
B2011MX	6	5.3	89	B2010MX	8	8	100
B2012MX	6	5.5	92	B2011MX	3	3	100
B2013AR	6	5.4	90	B2012MX	3	3	100
B2020AR	2	1.9	93	B2013AR	3	2.9	97
B2021AR	6	5.5	92	B2020AR	8	8	100
B2022AR	6	5.5	92	B2021AR	3	3	100
B2023MX	6	5.5	92	B2022AR	3	3	100
B2030MX	2	1.2	60	B2023MX	3	3	99
B2031MX	6	5.5	92	B2030MX	8	8	100
B2033AR	6	5.5	92	B2031MX	3	3	100
B20L00H	1	0.8	82	B2033AR	3	3	100
B20S00H	1	0.8	82	B20L00H	1	1	100
				B20S00H	3	3	100

M88 and HMTWRECKER Ending Availabilities  
Table M-4

The "end availability" is a reliable indicator of availability and recovery support throughout the scenario. Table M-5 provides the combined recovery operations for all divisional maintenance units by TP.

TP	1	2	3	4	5	6	7	8	9	10	11	12
# RECOV.	28.3	34.2	33	32.3	46.2	36.9	40.5	48.9	43.6	37.1	40.8	32.5
WAITING RECOV.	7.6	7.5	7.6	7.2	9.6	7.5	28.7	18.1	70.1	63.7	58.8	54.1

Recovery Operations for All Divisional Maintenance Units  
Table M-5

2 Recovery operations for the division base support company's M88s are listed in table M-6. At TP 9, the number of vehicles which needed to be recovered to this battalion by a M88 was too large to be handled by the single (1) M88 at this unit. As many as 12 vehicles (TP 9) had to wait for the M88 to become available in order to be recovered. Among these vehicles were 5 M1A2s, 4 IFV/TOWs, 2 BCMDVEH, and 1 M88. The M88 designated for this unit sustained damage during TP 9 and was not 100% operable during the remaining part of the scenario.



TP	1	2	3	4	5	6	7	8	9	10	11	12
# RECOV.	0.5	0.6	0.7	0.7	0.7	0.8	1.6	3.1	0.3	0.4	0.3	0.3
WAITING RECOV.	0.1	0.1	0.1	0.1	0.2	0.1	4.3	1.7	11.6	11.5	11.5	11.4
VEH AVAIL.	99	98	98	97	97	97	96	95	11	11	11	11

M88 Recovery Operations for the DBSC  
Table M-6

3 Recovery operations for the 1st brigade's BSC's M88s are listed in table M-7. At TP 10, the number of vehicles which needed to be recovered to this company by a M88 was too large to be handled by the two M88s at this unit. As many as 15 vehicles (TP 9) had to wait for a M88 to become available in order to be recovered. Among these vehicles were 6 BCMDVEHs, 4 M1A2s, 4 AVLBs, and 1 M88.

TP	1	2	3	4	5	6	7	8	9	10	11	12
# RECOV.	1.8	2.2	2.1	2	2.1	2.2	1.9	1.8	3.9	5.2	5	4.9
WAITING RECOV.	0.5	0.5	0.5	0.5	0.7	0.4	0.5	0.4	15.4	10.4	5.9	1.7
VEH AVAIL.	99	99	98	98	97	97	96	96	95	95	94	96

M88 Recovery Operations for the 1st Brigade's BSC  
Table M-7

4 Recovery operations for the 3rd brigade's BSC's M88s are listed in table M-8. At TP 10, the number of vehicles which needed to be recovered to this company by a M88 was too large to be handled by the two M88s at this unit. As many as five vehicles (TP 10) had to wait for a M88 to become available in order to be recovered. Among these vehicles were 1 BCMDVEH, 1 M1A2, 1 CEV, and 1 AVLB.

TP	1	2	3	4	5	6	7	8	9	10	11	12
# RECOV.	1.8	2.2	2.1	2	2	1.9	3.5	1.9	2.1	1.6	2.3	2.9
WAITING RECOV.	0.5	0.5	0.5	0.5	0.4	0.4	0.6	0.4	4.2	5.3	4.6	3.2
VEH AVAIL.	99	99	98	98	97	97	96	96	27	40	40	60

M88 Recovery Operations for the 3rd Brigade's BSC  
Table M-8

5 Table M-9 lists the recovery workload for all maintenance units by recovery vehicle type.



Maintenance	Recovered by			Maintenance	Recovered by		
Unit	HMTWRECKER	M88	TOTAL	Unit	HMTWRECKER	M88	TOTAL
B000000	271	247	519	B2010MX	37	35	72
B20000H	23	6	30	B2011MX	1	15	16
B2000AR	31	10	41	B2012MX	1	7	9
B20020H	1	0	1	B2013AR	2	30	33
B200AH2	6	2	8	B2020AR	36	23	60
B200BH2	1	1	3	B2021AR	2	10	13
B200CH2	2	1	3	B2022AR	2	15	17
B200DH2	7	2	9	B2023MX	2	18	19
B200EH2	1	1	3	B2030MX	37	26	63
B200FH2	1	1	3	B2031MX	5	9	14
B200GM2	0	0	0	B2033AR	3	9	12
B200JH2	13	3	16	B20L00H	1	0	1
B200KH2	1	1	3	B20S00H	1	0	2
B200LH2	4	2	6				

Recovery Workload (by M88 and HMTWRECKER)  
Table M-9

## 6 Conclusion:

The number of M88s at the DSB and the 1st and 3rd BSC were inadequate to perform the recovery operations generated by this scenario. Weapon system RTC was constrained by this shortfall.

### (b) Recovery - Personnel.

The recovery of injured personnel is implied; therefore, injured personnel do not require a recovery vehicle for transport from the battlefield to a medical facility. This phenomenon negates the possibility of a backlog of injured personnel needing recovery. Hence, personnel RTC will never be impeded by recovery assets.

### (c) Evacuation - Weapons.

1 Evacuation support is performed in the scenario by HETs and a generic evacuation vehicle. The purpose of the generic evacuation vehicle is to represent the backhaul capability of other transporters. The analysis focuses on the HETs because they are considered potential constraints on evacuation. All but three of the key weapon systems utilize HETs for evacuation. The exceptions are AH64D, RAH66D, and the AVENGER. Only the performance of HETs is addressed. Weapon system evacuations are performed in a "timely manner" if damaged weapon systems are evacuated to the designated area (corps or division) within two TPs of the sustained damage.

2 Evacuation in this scenario is supported at the division area/CSB(DS) (unit B2000AR) and at the corps rear area (unit B000000) with 24 and 30 HETs assigned, respectively. Evacuations occur for two reasons:

- designation of maintenance support at higher support levels.
- lengthy clockhour repair times (any vehicle or weapon system that requires more than seven clockhours to repair will be sent to the corps

support area (forward) so it will not 'tie up' mechanics at the ORG level with maintenance work that requires a considerable amount of time).

- maintenance overflow (maintenance overflow occurs when the number of hours needed to repair awaiting weapon systems exceeds a maintenance man hour threshold set for a maintenance unit).

3 Across the scenario, a maximum of three percent of the corps area's HETs and ninety-three percent of the division area's HETs were not available at any given TP.

4 There were 21 vehicle and weapon system evacuations to the corps rear area which required a HET (refer to table M-10). These vehicles and weapon systems included 19 AVLBs and 1 BHET. As early as TP 4, the corps rear area had problems evacuating damaged vehicles and weapon systems from below division. The number of vehicles and weapon systems waiting to be or in the process of being evacuated to the corps area never rose above five system (TP 12).

TP	1	2	3	4	5	6	7	8	9	10	11	12
# EVAC.	0.8	2.2	2.1	2.0	1.7	1.8	1.8	1.6	1.7	1.6	1.5	1.6
WAITING EVAC.	1.1	2.1	2.7	3.2	3.8	4.2	4.4	4.6	4.6	4.7	4.9	5.4

Evacuation Workload - Corps Rear Area  
Table M-10

5 There were 24 vehicle and weapon system evacuations to the CSB(DS) which required a HET (refer to table M-11). These vehicles and weapon systems included 23 AVLBs and 1 BCMDVEH. All of these vehicles and weapon systems were evacuated to the area supported by the CSB(DS) in a "timely manner."

TP	1	2	3	4	5	6	7	8	9	10	11	12
# EVAC.	1.9	3.2	2.8	2.5	2.3	2.2	2	3.2	1.2	0.9	1	1.3
WAITING EVAC.	0.7	0.5	0.4	0.4	0.3	0.2	0.3	0.2	0.2	0.1	0.1	0.2

Evacuation Workload - Corps Forward Area (CSB(DS))  
Table M-11

## 6 Conclusion:

Evacuations to the corps rear area constrained weapon system RTC. Since the corps rear HETs had a 97 percent availability level for the entire scenario, evacuation distance was the main factor in these systems not being evacuated in a "timely manner".

(d) Evacuation - Personnel.

No data to be analyzed for this section.

(e) Repair - ground based weapons.

1 Sufficient repair support is determined by the availability of required mechanic types at the supporting maintenance facility for ORG/DS and GS levels. For the most part, FORCE XXI mechanics in the DISCOM are modular in that they can repair both ORG and DS level damaged vehicles and weapon systems. Table M-12 shows, for assigned ORG/DS level mechanics, the maximum MMH percentage utilized for each of the 26 maintenance facilities across the

scenario. When this percentage is 100 sufficient mechanics were not available to service the workload (note shaded cells) at some point during the scenario.

2 There is one exception to the above described 100 percent indicator - maintenance backlog overflow. Resource status is reported only at the end of a TP thus making it possible that 100 percent utilization occurred within the TP but shows less at the end of the TP due to completion of repairs. So the condition can exist where the ending TP utilization is less than 100 percent but within a TP conditions existed that caused maintenance backlog overflow.

3 In general, for those facilities with less than 100% utilization at the end of a TP, sufficient maintenance resources were always available. There were only minor exceptions when very small fractional workloads were evacuated due to backlog status and the MMH utilization was not 100%. Any under-utilized resources are not necessarily "excesses" but are indicators of the magnitude of the workload for this scenario. Force structure implications are not addressed in this report.

4 Figures M-1 through M-4 show the MMH utilization by mechanic type for those maintenance units with 100 percent utilization.

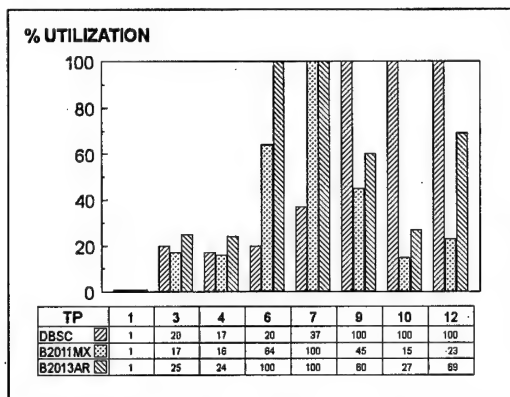
Unit Name	Armament		Automotive		Helicopter		Medical	
	Util. %	Str.	Util. %	Str.	Util. %	Str.	Util. %	Str.
B20000H	3	3	99	6	32	21	100	3
B2000AR	100	19	100	36			100	12
B20020H	0	11	7	20	8	35	100	3
B200AH2	0	8	18	14			100	3
B200BH2	0	8	8	14			43	3
B200CH2	1	8	11	14			58	3
B200DH2	0	8	20	14			100	3
B200EH2	0	8	8	14			43	3
B200FH2	0	8	10	14			43	3
B200GM2	9	6	2	11			25	6
B200JH2	1	8	100	14			100	3
B200KH2	0	8	7	14			43	3
B200LH2	1	8	59	14			43	3
B2010MX	52	29	89	54			63	20
B2011MX	100	18	91	35			47	21
B2012MX	23	18	20	35			46	21
B2013AR	100	21	100	38			100	9
B2020AR	13	29	51	54			63	20
B2021AR	42	21	47	38			89	9
B2022AR	100	21	85	38			89	9
B2023MX	100	18	100	35			53	21
B2030MX	31	29	83	54			62	20
B2031MX	58	18	100	35			62	21
B2033AR	25	21	42	38			89	9
B20L00H	0	12	7	22	37	37	100	3
B20S00H	0	8	15	15	100	11	100	2

Utilization and Initial Strength by ORG/DS Level Mechanics  
Table M-12

a Five maintenance facilities' ORG/DS level armament mechanics were 100 percent utilized: B2000AR (DBSC), B2011MX, B2013AR, B2022AR, and B2023MX.

- The utilization of the DBSC (unit B2000AR) and the 1st brigade's FSCs can be found in Figure M-1.

- The armament mechanics in the DBSC were fully utilized from TP 9 on. No vehicles or weapon systems had to be recovered to the CSB(DS) because of maintenance overflow. At the end of the scenario (TP 12), six IFV/TOWs, three HMMWV/50CALs, two M1A2s, one AVENGER, and one HMMWV/MK19 were still waiting for armament mechanics.

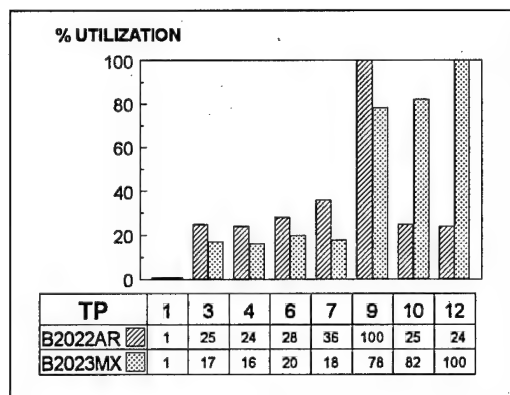


ORG/DS Level Armament Mechanic Utilization  
for the DBSC (Unit B2000AR) and the FSCs of the 1st Brigade  
Figure M-1

- Maximum utilization of the armament mechanics at the 1st battalion's FSC occurred at TP 7. Three IFV/TOWs were waiting for armament repair at the end of TP 7. No maintenance overflow occurred at this FSC because of a shortage of armament mechanic manpower hours.

- The armament mechanics supporting the 3rd armored battalion were fully utilized in TPs 6 and 7. No vehicles or weapon systems had to be recovered to the 1st brigade's BSC because of maintenance overflow. At the end of TP 6, three IFV/TOWs and two M1A2s were waiting for armament mechanics to become available at this FSC. By the end of TP 7, two IFV/TOWs still required armament maintenance.

- The armament mechanic utilization of the 2nd brigade's FSCs can be found in Figure M-2.

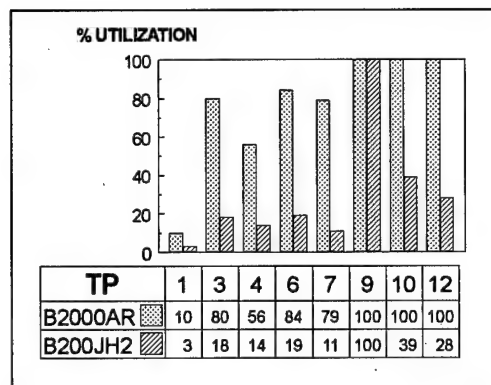


ORG/DS Level Armament Mechanic Utilization for the FSCs  
Supporting the 2nd and 3rd Battalions of the 2nd Brigade  
Figure M-2

- The armament mechanics in the 2nd brigade's 2nd armor battalion's FSC were fully utilized in TP 9. No vehicles or weapon systems had to be recovered to the 2nd brigade's BSC because of maintenance overflow. At the end of TP 9, no vehicles or weapon systems had to wait for armament mechanics to become available at this FSC.

- Maximum utilization of the armament mechanics at the 2nd brigade's 3rd mechanized infantry battalion's FSC occurred during TP 12. One IFV/TOW was waiting for armament repair at the end of TP 12. No maintenance overflow occurred at this FSC because of a shortage of automotive mechanic manpower hours.

b Five maintenance facility's ORG/DS level automotive mechanics were 100 percent utilized. See figure M-3 for units' B2000AR and B200JH2 automotive mechanic utilization.

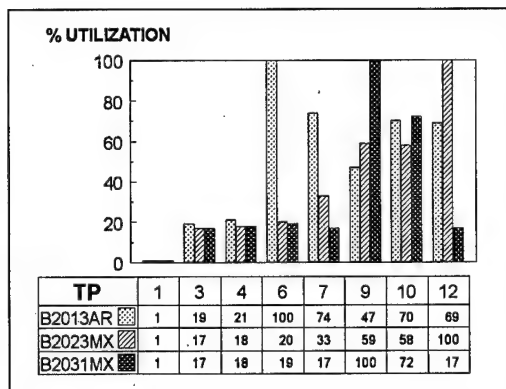


ORG/DS Level Automotive Mechanic Utilization  
for the DBSC and Unit B200JH2  
Figure M-3

- The automotive mechanics in the DBSC were fully utilized from TP 9 on. The following vehicles and weapon systems had to be recovered to the CSB(DS) because of maintenance overflow: 11 HMMWVs, 6 MTVs, 4 AVLBs, 2 HETs, 2 LMTVs, 1 IFV/TOW, 1 BAMB, and 1 AVENGER. At the end of the scenario (TP 12), 126 HMMWVs, 15 MTVs, 9 HMMWV/50CALs, 6 BAMBs, 4 B5AMMOs, 4 HMMWV/MK19s, 3 LMTVs, and 7 other CSS trucks were waiting for automotive repair at the DBSC.

- Maximum utilization of the automotive mechanics supporting the A battery of the 5th 155mm self-propelled howitzer battalion provided maximum support during TP 9. One 32-ton ammo truck was waiting for armament repair at the end of TP 9. Three 32-ton ammo trucks and one HEMTT fueller were evacuated to the CSB(DS) because of maintenance overflow.

- The automotive mechanic utilization of the three FSCs that reached 100 percent utilization can be found in Figure M-4.



ORG/DS Level Automotive Mechanic Utilization for the  
FSCs Supporting Units B2013AR, B2023MX, and B2031MX  
Figure M-4

- The automotive mechanics in the 1st brigade's 3rd armor battalion's FSC were fully utilized in TP 6. No vehicles or weapon systems had to be recovered to the 2nd brigade's BSC because of maintenance overflow. At the end of TP 6, two M1A2s and one IFV/TOW were waiting for automotive mechanics to become available at this FSC.

- Maximum utilization of the automotive mechanics at the 2nd brigade's 3rd mechanized infantry battalion's FSC occurred during TP 12. One IFV/TOW was waiting for automotive repair at the end of TP 12. No maintenance overflow occurred at this FSC because of a shortage of automotive mechanic manpower hours.

- Maximum utilization of the automotive mechanics supporting the 3rd brigade's 1st mechanized infantry battalion's FSC occurred at TP 9. Two HMMWVs, two BAMBs, one IFV/TOW, one MTV, and one HEMTT ammo hauler were waiting for automotive repair at the end of TP 9. No maintenance overflow occurred at this FSC.

c Table M-13 shows the DS level mechanic utilization at the CSB(DS) and the DS level helicopter mechanic utilization.

Unit Name	Armament		Automotive		Helicopter		Medical	
	Util. %	Str.	Util. %	Str.	Util. %	Str.	Util. %	Str.
CSB(DS)	57	51	100	77	28	38	19	150

Utilization and Initial Strength by DS Level Mechanics  
Table M-13

- The automotive mechanics at the CSB(DS) were 100 percent utilized from TP 7 on. The largest buildup of unserviced weapon systems occurred during TP 11 with 15 IFV/TOWs, 14 MLRS, 9 M88s, 4 CEVs, 3 CRUSADERS, 3 FARVs, 2 M1A2s, and 1 SFV/STINGER. Despite its 77 automotive mechanics, the CSB(DS) had difficulties with the workload produced during this scenario.

#### Conclusion:

Within the DISCOM, the number of mechanics was sufficient to handle the workload produced by this scenario except at the DBSC. Neither the armament nor the automotive mechanics at the DBSC could repair the incoming damaged vehicles and weapon systems in a "timely manner."

(f) Repair - helicopters.

Note: The AH64D (Apache) and the RAH66D (Comanche) are the systems represented by the helicopter weapon system category.

1 Sufficient helicopter repair support is determined by the availability of required helicopter mechanics at the supporting maintenance facility. The number of helicopter mechanics assigned to the helicopter battalions, the corps area, and division area can be found in tables M-12 through M-13. Note from these tables that none of the helicopter maintenance facilities had their mechanics 100% utilized during any TP of the scenario.

2 Recovery - The AH64D and the RAH66D do not require assisted recovery. If one of these helicopters receives non-catastrophic damage, that helicopter is assumed to self-recover. Helicopter RTC will never be impeded by recovery assets.

3 Evacuation - The AH64D and the RAH66D do not require a HET for evacuation. Instead, a generic evacuation vehicle is used to evacuate AH64Ds and RAH66Ds. The availability of HETs does not hamper the process of helicopter evacuation.

4 Conclusion:

None of the three CSS assets (recovery, evacuation, and repair) restricted helicopter RTC during the scenario.

(g) Medical treatment.

1 Personnel can be in one of the following three categories: combat ready, medical treatment process, or KIA. When injured personnel arrive at a medical facility, they receive treatment immediately, have to wait for the next available medic, or have to be evacuated to a higher echelon because of the severity of the wound. After treatment, injured personnel are returned to their respective unit. At TP 11, the theater's Blue troop force was at 92%, its lowest availability during any TP of the scenario (the blue troop strength at TP 11 was less than that of TP 12 by .11 percentage points). The KIA column is the accumulative blue troop losses over the scenario.

TP	Combat Ready	Being Treated	KIA	% AVAIL
0	19,843	0	0	100
1	19,767	76	0	100
2	19,663	178	2	99
3	19,649	192	2	99
4	19,635	206	2	99
5	19,514	326	3	98
6	19,525	315	3	98
7	19,384	401	57	98
8	19,038	660	145	97
9	18,128	1,218	497	94
10	17,865	1,426	552	93
11	17,632	1,608	603	92
12	17,651	1,589	603	92

Theater Personnel Profile  
Table M-14

2 During the course of the scenario, the majority of personnel that are not combat ready are being treated or awaiting treatment at the corps rear area. When injured personnel have to be evacuated to corps, their severe injuries take approximately six days to treat; therefore, those persons will not return to duty for the remaining part of the scenario.

3 While the combined totals of the theater's Blue troop forces always remained above the 80% availability sufficiency criteria, two units (units B2000AR and B2033DC) fell below this criterion for two or more consecutive TPs. These units are listed in table M-15 along with their troop combat availability percentage. The increase of combat intensity in the later part of the scenario and the treatment time of injured troops evacuated to the corps area are the two factors that contribute to the low troop availability at these units.

TP	1	2	3	4	5	6	7	8	9	10	11	12
B2000AR	100	99	99	98	98	98	98	97	74	73	73	73
B2033FC	100	99	99	99	99	99	87	73	78	80	80	81

Percentage of Personnel Available  
Table M-15

4 Conclusion:

Medical repair teams organic to echelons lower than division did not constrain personnel RTC.

(2) Key Weapon Availability.

(a) Up to this point the analysis has addressed individual CSS support services (recovery, evacuation, repair, medical treatment) and their impact on RTC. With the exceptions noted, for the most part each of these support services was sufficient for the available workloads.

(b) The following section of the report, in effect, examines the cumulative effects of CSS services by looking at the availability of key weapons. Tables M-17 through M-25 provide unit level overviews for each key weapon system.

1 Each table (M-17 through M-25) contains the following information:

-Initial Strength (stgn) - weapon system density at the start of the scenario.

-End Strength (stgn) - weapon system density at the end of the scenario.

-Permanent Losses (K-kills) - catastrophic kills and abandonments.

-End % availability - weapon system availability at the end of the scenario. This availability calculation excludes permanent losses in conformance with the earlier described sufficiency criteria. Permanent losses are excluded because their occurrence is independent of how well (or poorly) CSS performs.

2 Two phenomena appearing in the following tables warrant discussion:



a A "dead unit" is indicated when the "end strength" and "availability" are zero. A "dead unit" occurs when significant unit resources are decimated and that unit can no longer effectively function. Its surviving resources, damaged and undamaged, are distributed to repair of other units requiring weapons, respectively. The row in each table for dead units is shaded.

b One would expect the "end strength" to always be smaller than initial strength if there were permanent losses. This is not always the case because of the need based reissue of repaired (and crewed) weapons. Depending on the current available strength of a weapon, reissues are distributed proportionally higher to those units with the greatest need (lowest current strength) and not to the unit which originally "owned" the weapon.

(c) Results:

1 All weapon systems met the availability sufficiency criteria of 80 percent.

2 The following table lists the units that were rendered combat ineffective ("dead") during the scenario, the time that the unit became ineffective, and the major weapon system(s) organic to that unit.

Ineffective "Dead" Unit	Time	Major Weapon Systems
B201AA1	19.8	SFV/STINGER
B003LA1	23.3	AVENGER
B00B3M2	23.8	MLRS_CR
B2132MX	38.2	IFV/TOW

Units Rendered Combat Ineffective During the Scenario  
Table M-16

3 Conclusion:

The CSS system did not constrain weapon system availability.

Reference (b).1). of Section (2), Key Weapon Availability -- end % availability is the weapon system availability at the end of the scenario. This availability calculation excludes permanent losses in conformance with the earlier described sufficiency criteria. Permanent losses are excluded because their occurrence is independent of how well (or poorly) CSS performs.

Unit ID	Initial Stgn	End Stgn	K-Kills	End # Avail
B2011DC	4	3.3	0.3	88
B2011MX	14	12.9	0.1	93
B2012MX	14	13.4	0	96
B2013AR	30	26.3	0.9	90
B2021AR	30	28.7	0	96
B2021DC	4	3.7	0.1	96
B2022AR	30	28.3	0.4	95
B2023MX	14	12.8	0.6	96
B2031DC	4	3.2	0.3	87
B2031MX	14	13.3	0.1	95
B2033AR	30	28.7	0	96
B2332AR	14	7	2.6	61
Total Permanent Losses			5.3	

M1A2 Status  
Table M-17

Unit ID	Initial Stgn	End Stgn	K-Kills	End # Avail
B2010MX	3	2.9	0	97
B2011MX	30	22.1	5.1	88
B2012MX	30	29.2	0.1	97
B2013AR	14	10.7	2.1	90
B2020AR	3	2.9	0	98
B2021AR	14	12.5	0.9	96
B2022AR	14	13.1	0.4	97
B2023MX	30	24.3	2.2	87
B2030MX	3	2.6	0.2	94
B2031MX	30	28.3	0.7	96
B2032MX	2	1.9	0	94
B2033AR	14	13.7	0	98
B2132MX	14	0	3.7	0
B2232MX	14	6.3	3.4	60
Total Permanent Losses			18.7	

IFV/TOW Status  
Table M-18

Unit ID	Initial Stgn	End Stgn	K-Kills	End # Avail
B201AA1	4	0	1.6	0
B201CA1	4	3.8	0	95
B201EA1	4	3.9	0	98
B201JA1	4	3.3	0.8	100
B201KA1	4	4	0.2	100
B201LA1	4	3.2	1	100
Total Permanent Losses			3.7	

SFV/STINGER Status  
Table M-19

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B2011DC	13	11.3	1.4	97
B2011MX	6	5.3	0.7	99
B2012MX	6	6	0	100
B2013AR	6	5.4	0.2	94
B2021AR	6	5.7	0.4	100
B2021DC	13	12.7	0.3	100
B2022AR	6	5.4	0.7	100
B2023MX	6	5.5	0.5	100
B2031DC	13	11.6	1.7	100
B2031MX	6	5.9	0.1	100
B2032MX	6	5.9	0	99
B2033AR	6	6	0	100
B2332AR	6	4.6	0.8	88
Total Permanent Losses			6.7	

FSV/45MM Status  
Table M-20

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B201BA1	6	5.8	0.5	100
B201DA1	6	5.3	0.5	97
B201FA1	6	6	0	100
B201GA1	6	4.2	0.7	80
B201HA1	6	6	0	100
B201IA1	6	5	0.7	93
Total Permanent Losses			2.3	

AVENGER Status  
Table M-21

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B200GM2	9	8.4	0.2	95
Total Permanent Losses			0.2	

MLRS D Status  
Table M-22

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B200AH2	6	5.1	0.5	93
B200BH2	6	5.3	0.3	92
B200CH2	6	4.5	1	91
B200DH2	6	5.4	0.1	93
B200EH2	6	5.4	0.2	92
B200FH2	6	5.2	0.4	94
B200JH2	6	4	1.6	89
B200KH2	6	4.8	0.7	91
B200LH2	6	3.9	1.5	87
Total Permanent Losses			6.4	

CRUSADER-D Status  
Table M-23

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B20L00H	15	10.6	0.5	73
Total Permanent Losses			0.5	

AH64D Status  
Table M-24

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B20G00H	8	0.0	7.1	0
B20L00H	9	8.2	0.2	93
B20S00H	16	14.4	0.1	91
Total Permanent Losses			7.4	

RAH66D Status  
Table M-25

(3) CSS Workloads. The following CSS workloads are provided to show the type and magnitude of workload serviced by each unit.

(a) Recovery and evacuation vehicle workload. The second column in table M-26 indicates the number of vehicles that required assisted recovery from their owning unit. The third through sixth columns show the number of vehicles that required evacuation 'in' and 'out' of a higher echelon maintenance unit. Also indicated is whether or not the vehicle required a HET for evacuation.

Maint Unit	Total # of assisted recoveries		# EVAC'D IN		# EVAC'D OUT	
	HMTWRECKER	M88	TOTAL	w/ HET	TOTAL	w/ HET
B000000	271.2	247.4	42.7	20.5	0	0
B20000H	23.4	6.2	0	0	7.9	2.4
B2000AR	31.2	9.9	30.2	24	34.7	20.5
B20020H	0.8	0.4	0	0	0	0
B200AH2	6.4	1.6	0	0	0	0
B200BH2	1.4	1.3	0	0	0	0
B200CH2	1.6	1.4	0	0	0	0
B200DH2	7.1	1.8	0	0	0	0
B200EH2	1.4	1.4	0	0	0	0
B200FH2	1.4	1.4	0	0	0	0
B200GM2	0.3	0	0	0	0	0
B200JH2	13	2.5	0	0	4.8	0.6
B200KH2	1.4	1.3	0	0	0	0
B200LH2	3.6	2.3	0	0	2.5	0.5
B2010MX	37	35	0	0	6.3	6.3
B2011MX	1.5	14.6	0	0	0	0
B2012MX	1.4	7.2	0	0	0	0
B2013AR	2.3	30.5	0	0	0	0
B2020AR	36.4	23.3	0	0	7.3	7.3
B2021AR	2.2	10.3	0	0	0	0
B2022AR	1.8	15.1	0	0	0	0
B2023MX	1.8	17.6	0	0	0	0
B2030MX	36.8	26.3	0	0	6.8	6.8
B2031MX	5.1	9.2	0	0	0	0
B2033AR	2.5	9.2	0	0	0	0
B20L00H	0.8	0.4	0	0	0	0
B20S00H	1.4	0.4	0	0	0	0

Recovery and Evacuation Workload  
Table M-26

(b) Medical team workload. Table M-27 shows the number of personnel that arrived at a medical facility during the scenario due to combat and non-combat (DNBI) actions. The last column displays the number of treatment man hours expended by all medical teams.

MEDICAL UNIT	CBT MEDICAL RECOVERED	DNBI MEDICAL RECOVERED	MMH EXPENDED	MEDICAL UNIT	CBT MEDICAL RECOVERED	DNBI MEDICAL RECOVERED	MMH EXPENDED
B000000	1,679	1,070	3,721.6	B2010MX	0	51	111.3
B20000H	1	29	57.9	B2011MX	1	40	88.3
B2000AR	28	246	102.5	B2012MX	0	40	86.6
B20020H	0	20	38.5	B2013AR	3	32	73.2
B200AH2	0	14	30.7	B2020AR	1	51	112.8
B200BH2	0	5	11.6	B2021AR	1	32	71.4
B200CH2	1	5	11.7	B2022AR	0	33	71.1
B200DH2	0	14	30.6	B2023MX	5	37	88.4
B200EH2	0	5	11.5	B2030MX	1	50	110.6
B200FH2	0	5	11.6	B2031MX	7	36	86.6
B200GM2	0	7	15.1	B2033AR	2	31	70.4
B200JH2	1	13	30.9	B20L00H	0	15	30.2
B200KH2	0	5	11.8	B20S00H	0	16	25.3
B200LH2	1	5	11.9				

Medical Unit Workload  
Table M-27

(c) Maintenance team workload. Table M-28 shows the number of vehicles (both ground and air) that were recovered to a maintenance facility during the scenario. The last four columns display the number of maintenance man hours expended on ground and air vehicles and the estimated number of maintenance man hours required at TP 6 to repair all vehicles at the maintenance facilities.

MAINT UNIT	# VEHICLES RECOVERED		GROUND VEHICLES		HELICOPTERS	
	CBT DAMAGE	RAM DAMAGE	MMH EXPENDED	MMH NEEDED	MMH EXPENDED	MMH NEEDED
B20000H	6.5	57.8	78.3	10	56.7	
B2000AR	260.5	108.7	235.3	450.1		
B20020H	0	10	8.9	0.2	23.4	2.3
B200AH2	0.1	11.5	18.5	0.4		
B200BH2	0	3.5	8.5	0.4		
B200CH2	0.9	3.5	9.4	1.7		
B200DH2	2.6	11.5	22.8	0.5		
B200EH2	0.1	3.5	8.9	0.4		
B200FH2	0.2	3.5	8.9	0.3		
B200GM2	0.1	1.7	3.4	0		
B200JH2	22.9	10.9	46.4	0.8		
B200KH2	0.1	3.5	8.7	0.3		
B200LH2	9.1	3.1	20.9	1.7		
B2010MX	32.8	76.2	251.5	24.4		
B2011MX	26.8	18.3	160.7	9.6		
B2012MX	1	20.1	76.2	6.1		
B2013AR	44.3	21.7	258.6	30.4		
B2020AR	7.2	80.5	190.6	29.7		
B2021AR	8.7	23.1	124.2	8.6		
B2022AR	16	22.7	157.8	8.4		
B2023MX	27.8	19.3	175.6	6.7		
B2030MX	23.3	78	224.1	27.6		
B2031MX	29	19.6	132.8	6.3		
B2033AR	5	23.4	112.7	8.6		
B20L00H	0.4	34	9.5	0.2	87	0.2
B20S00H	1.9	25.8	11	0.1	93.4	2.1

Maintenance Unit Workload  
Table M-28

(4) Observations.

- 1) The number of M88s at the DSB and the 1st and 3rd BSC were inadequate to perform the recovery operations generated by this scenario. Weapon system RTC was constrained by this shortfall.
- 2) Evacuations to the corps rear area constrained weapon system RTC. Since the corps rear HETs had a 97 percent availability level for the entire scenario, evacuation distance was the main factor in these systems not being evacuated in a "timely manner".
- 3) Within the DISCOM, the number of mechanics was sufficient to handle the workload produced by this scenario except at the DBSC. Neither the armament nor the automotive mechanics at the DBSC could repair the incoming damaged vehicles and weapon systems in a "timely manner."

## 6. Supply Analysis.

a. This analysis assesses the CSS system's capability to support combat and combat support units for the defined scenario. The CSS units must fill requests for replenishment stockages in a "timely fashion;" failure to do so can be attributed to lack of transporters, lack of stockages, long order-to-delivery times, or a combination of the three.

b. Analysis. This analysis is structured into two parts: supply class III and supply class V.

### (1) Supply Class III.

(a) Requirement. For the scenario, the requirement for class III (petroleum) was found by summing the consumption (quantities "used" plus quantities "lost") of all maneuver units (CSS units were excluded from this computation) during each TP. Calculated in "gallons (gals)," the requirement for class III for the length of the scenario is presented in table L-1.

The consumption of supplies generates a requirement for stocks of supply types as well as transportation assets to deliver the replenishments to maneuver unit stockages. Consumption is translated into an order for materiel. Each order levies upon the CSS system a requirement for existing stocks and transportation assets. The authorized amount declines with time due to the attrition of weapon systems. Each weapon system has an authorized amount of specific supply types, and the authorized stockage is reduced as systems are killed. Table L-1 identifies the area of operation (AO) stockage levels and activities for class III: 1) amounts used; 2) amounts lost; and 3) amounts consumed (the requirement).

TP	USED GALS	LOST GALS	REQUIREMENT CONSUMED
0	0	0	0
1	118,099	25	118,124
2	100,934	0	100,934
3	88,957	0	88,957
4	105,923	0	105,923
5	86,869	1,402	88,271
6	98,638	1,568	100,207
7	74,871	5,508	80,379
8	30,251	2,514	32,765
9	30,055	4,652	34,707
10	61,964	230	62,194
11	26,532	364	26,896
12	18,958	31	18,989
TOTAL	842,052	16,294	858,346

Consumption of Class III, GALS

Table L-1

(b) Discussion. The resupply options for maneuver units are: 1) resupply is unnecessary (Balance on Hand  $\geq 75\%$  of Authorized); 2) standard resupply (Balance on Hand  $\geq 50\%$  &  $< 75\%$  of Authorized); or 3) emergency resupply (Balance on Hand  $< 50\%$  of Authorized); reference Appendix B for definitions of "standard" and "emergency" resupply. Table L-2 indicates that during no TP did any maneuver unit have a BOH so low as to warrant the use of either standard or emergency resupply.



RESUPPLY	TP												
	0	1	2	3	4	5	6	7	8	9	10	11	12
RESUPPLY UNNEC	104	102	72	78	69	84	66	74	93	87	64	69	79
STANDARD RESUPPLY	0	2	32	25	33	18	29	25	5	13	35	29	20
EMERGENCY RESUPPLY	0	0	0	1	2	1	6	2	3	1	1	2	1
ALL UNITS <sup>1</sup>	104	104	104	104	104	103	101	101	101	101	100	100	100

<sup>1</sup> COMBAT INEFFECTIVE (DEAD) UNITS ARE NOT INCLUDED.

Number of Maneuver Units Needing Resupply, Class III  
Table L-2

For more detail on individual units requiring resupply see table L-3 below. These units wait an average of 4.4 TPs (median of 4 TPs) before their BOH returns to a level no longer requiring resupply of class III.

Unit	TP													#TPs
	0	1	2	3	4	5	6	7	8	9	10	11	12	
B000000				72	74			68	71	73	74		67	7
B0001EN											73	72	66	3
B0002EN													73	1
B0008EN											75	74	69	3
B00A1M2			71		69		64				67			4
B00A2M2			71		69		64			74	63			5
B00A3M2			70		69		70				68	61		5
B00A4M2			72		72		69				73	68	65	6
B00A5M2			72		69		64				68	64		5
B00A6M2			71		68		65				64			4
B00A7M2			71		69		64				66	63		5
B00A8M2			71		68		64			72	60			5
B00A9M2			71		69		64			73	61			5
B00B1M2			72		71								72	3
B00B2M2			72	63	71								73	4
B00B3M2			72	62	72									3
B00B4M2			73	63	72							73		4
B00B5M2			72		72							72		3
B00B6M2			73	63	72							73		4
B00BAH2			66		64							73		3
B00BBH2			67		63					74				3
B00BCH2			67					75						2
B00C1M2							72	61			72	66	63	5
B00C2M2							73	62			69	63		4
B00C3M2							72	60			71	65		4
B00C4M2							72	62			71	70		4
B00C5M2							72	62			72	67		4
B00C6M2							73	62			69	65		4
B00CAH2							68			74	61			3
B00CBH2							68			73	60			3
B00CCH2							68			73	60			3

Unit	TP													#TPs
	0	1	2	3	4	5	6	7	8	9	10	11	12	
B20000H												74	69	2
B2000AR					65	58	47	38	35	73	67	65	54	9
B20020H		71	71	42										3
B200AH2						71	47				68	62	59	5
B200BH2					70						69	63	59	4
B200CH2						73					70	64	59	4
B200DH2			61			72		65			66	65	62	6
B200EH2			61	74		69		63			67	65	67	7
B200FH2			63			70		63			64	61	59	6
B200GM2			70		67		63	52	74	70	61	50		8
B200JH2			61	69	52	62	45	53	52	75				8
B200KH2			64	70	52	66	49	54	49	70				8
B200LH2			61	69	52	60	45	72						6
B2010MX				67		69		67				68	63	5
B2011DC				71			64						74	3
B2011MX				71	59			74			70			4
B2012MX				72	63		62	54				72		5
B2013AR				69	55		67	59			67			5
B2020AR			74	62							67	65		4
B2021AR			74	62		68	55	69	67					6
B2021DC				66						74	68	69		4
B2022AR			74	63		68	55	72						5
B2023MX				66	56	75		66						4
B2030MX			75	59	45		73				74	72	67	7
B2031DC				65	54	72							72	4
B2031MX				63		67	71				68			4
B2032MX				70	63		70	63						4
B2033AR			74	60		63	52	65						5
B20L00H		72												1
B2132MX					71	65								2
B2232MX					72	65			73					3
B2332AR			75	68	60		60	51						5
Total	0	2	32	26	34	18	34	26	7	13	35	30	20	277

Percentage of Balance On-Hand (%) for Maneuver Units  
Requiring Resupply, Class III  
Table L-3

For example, at the end of TP 1, B20L00H had a class III BOH of 72%. This was the only TP in which B20L00H could have asked for resupply. During TP 1, B20L00H was one of two units capable of requesting resupply.

(c) Problems. Table L-3 shows BOH percentage for individual maneuver units requiring resupply. However, a review of individual orders

revealed a problem with the availability of replenishments and transporters (reference table L-4); problem areas have been shaded for easy identification. The "Trucks Avail" refers to the number of transporters available to convey the order; and "Avail Stocks" refers to the amount of class III at a supply unit after an attempt to fill the order.

TP	REQ'ING UNIT	SUPPLY UNIT	SUPPLY TYPE	AMOUNT REQUESTED GALS	AMOUNT SHIPPED GALS	AMOUNT SHORTED (\$)	TRUCKS AVAIL	AVAIL STOCKS GALS
3	B20020H	B2LAVSC	POL-B	8,558.75	1,628.13	80.98	10	0
3	B000000	B001POL	POL-B	5,389.21	2,497.56	53.66	0	3,047,923.3
4	B20020H	B2LAVSC	POL-B	23,545.48	5,453.3	76.84	11.8	0
4	B000000	B001POL	POL-B	5,488.88	2,498.91	54.47	0	3,068,497.3
5	B2031MX	B2031FC	POL-B	9,231.44	5,186.33	43.82	0	178.7
5	B2021AR	B2021FC	POL-B	13,423.36	12,530.13	6.65	0	653.3
6	B000000	B001POL	POL-B	5,288.55	2,494.39	52.83	0	3,055,147.8
6	B2032AR	B2032FC	POL-B	4,299.79	3,894.86	9.42	0.9	0
6	B2012MX	B2012FC	POL-B	9,051.18	5,096.77	43.69	1.9	0
6	B2023MX	B2023FC	POL-B	9,962.29	5,306.77	46.73	0	10,139.1
6	B2032MX	B2032FC	POL-B	2,129.11	259.64	87.81	0.9	0
6	B2031MX	B2021FC	POL-B	9,291.55	9,223.65	0.73	1.1	0
6	B200GM2	B20DASB	POL-B	1,963.58	17.83	99.09	0	43,068.5
6	B2032MX	B2032FC	POL-B	2,201.63	0	100	0.9	0
6	B200GM2	B20DASB	POL-B	2,335.68	0	100	0	43,068.5
6	B2032MX	B2032FC	POL-B	2,424.54	32.09	98.68	0.9	0
6	B200GM2	B20DASB	POL-B	2,726.93	1,999.15	26.69	0	43,068.5
7	B2023MX	B2023FC	POL-B	9,524.21	9,377.02	1.55	0	762.1
7	B000000	B001POL	POL-B	5,440.27	2,493.16	54.17	0	3,034,150.3
7	B2033AR	B2033FC	POL-B	13,258.49	12,156.04	8.32	0	1,385.3
7	B2012MX	B2012FC	POL-B	10,568.84	9,087.99	14.01	0.1	0
8	B000000	B001POL	POL-B	5,548.31	2,494	55.05	0	3,031,514.5
9	B200GM2	B20DASB	POL-B	1,914.05	30.8	98.39	0	51,496.9
9	B200GM2	B20DASB	POL-B	1,898.79	0	100	0	51,496.9
9	B200GM2	B20DASB	POL-B	1,989.89	10.4	99.48	0	51,496.9
9	B000000	B001POL	POL-B	5,649.04	2,496.71	55.8	0	3,027,027
10	B200DH2	B200BFC	POL-B	1,533.55	51.48	96.64	7.8	0
10	B2011MX	B2011FC	POL-B	8,525.82	6,969.63	18.25	1.5	0
10	B200AH2	B200AFC	POL-B	1,494.65	84.83	94.32	8	0
10	B2031MX	B2031FC	POL-B	9,483.29	6,621.53	30.18	1.6	0
11	B200GM2	B20DASB	POL-B	2,945.74	0	100	0	42,528.9
11	B000000	B001POL	POL-B	5,790.78	2,498.35	56.86	0	3,032,584.3
11	B2012MX	B2012FC	POL-B	9,327.67	8,891.1	4.68	1.1	0
11	B000000	B001POL	POL-B	5,923.87	2,500	57.8	0	3,012,095.5
11	B200EH2	B200BFC	POL-B	2,203.62	256.72	88.35	7	0
	TOTAL			220,333	124,139	43.7		

Problems Filling Maneuver Unit Orders, Class III  
Table L-4

To quantify a measure of risk, the maximum consumption of class III by a unit for any TP is compared with the current BOH for each TP; if the value is less than one, the unit would exhaust its supplies prior to repeating the activities of this "maximum" TP. Where "at risk" is less than one TP of

supply, class III was generally provided to maneuver units without placing them "at risk". One maneuver unit was "at risk". See Table L-5.

	TP													
MANEUVER UNIT	0	1	2	3	4	5	6	7	8	9	10	11	12	# of TPs
B20020H				1	1	1	1	1	1	1	1	1	1	10

"At Risk" Units, Class III Risk  
Table L-5

(d) Observation.

- 1) 5.9 percent (6 out of 101) of the maneuver units required emergency replenishment of Class III in TP 6.
- 2) 61.1 percent (22 out of 36) of the problems filling maneuver unit orders are attributable to the unavailability of Class III transporters.
- 3) 38.9 percent (14 out of 36) of the problems filling maneuver unit orders is attributed to the unavailability of Class III stockage.

(2) Supply Class V.

(a) Requirement. For the scenario, the requirement for class V (ammunition) was found by summing the consumption (quantities "used" plus quantities "lost") of all maneuver units (CSS units were excluded from this computation) during each of the 4-hour TPs. Calculated in "short tons (stons)," the requirement for class V for the length of the scenario is presented in table L-6.

TP	USED STONS	LOST STONS	REQUIREMENT CONSUMED
0	0	0	0
1	1,367	0	1,367
2	919	0	919
3	280	0	280
4	130	0	130
5	432	19	451
6	42	36	79
7	1,374	29	1,403
8	909	64	974
9	543	21	564
10	277	1	278
11	1,496	6	1,502
12	578	1	579
TOTAL	8,348	178	8,526

Consumption of Class V, STONS  
Table L-6

(b) Discussion.

1) This analysis focuses on thirteen munition types {155MM, ATACMS, MLRS, Hellfire, Longbow, 2.75RKT, Patriot, Stinger, 120MM, 25MM, Javelin, LAW, and TOWII} using five indices {Amount Authorized, Amount On-Hand, Amount Used, Amount Lost, and Ratio of Amount On-Hand to Amount Authorized}. A list of all corps and division assets listing VIC unit name designators and their actual unit names is contained in Appendix A. A list of all supply analysis definitions is contained in Appendix B.

a) The thirteen aforementioned munition types were grouped into six functional categories (Field Artillery, Aviation, Air Defense Artillery, Armor & Mechanized Infantry, Anti-Armor, and Anti-Tank). Each of the functional categories was divided into subcategories displayed in table L-7:

Category	Member Munition Type
Field Artillery	155MM - {M107 (CB), M116B1, M121A1, M449A1, M483A1, M549A1, M692/M731, M795, M825, M864, M864/AR, M864/GM, XM898, XM898/AR, XM898/GM, XM982, XM982/GM} ATACMS - {ATACMS-I, ATACMS-IA, ATACMS-II, ATACMS-IIA} MLRS - {ER-MLRS, ER-MLRS/GUIDED, M26, MSTAR}
Aviation	HELLFIRE, LONGBOW, 2.75RKT
Air Defense Artillery (ADA)	PATRIOT, STINGER
Armor & Mechanized Infantry	120MM - {120MM, PGMM, M929, M933}
Anti-Armor	25MM - {25MM, 40MM, 45MM}
Anti-Tank	JAVELIN, LAW, TOWII

Key Functional Categories  
Table L-7

b) Table L-8 displays the key munition types with the five aforementioned indices for each key munition at the end of the scenario. **The scenario end states shown are reliable indicators of individual unit supply status over the course of the scenario:**

c) Table L-8 represents an aggregation by munition type for all units in the modeled force. However, supply performance at some individual units for specific munitions varied significantly from these general indicators.

- The first column, key munition type, lists each of the munition types included for analysis in this report.

- The second column, amount authorized indicates quantities at initial state (TP 0) of the scenario.

- The total amount used of a key munition type (column three) can exceed the endstate BOH because during a particular TP a unit can receive a key munition type.

- Munitions lost due to combat activity (column four) did not cause any significant inventory imbalances resulting in availability shortfalls.

- The fifth and sixth columns, amount authorized and balance on hand (BOH) respectively, indicate quantities at endstate (TP 12) of the scenario.

- The seventh column, percentage of balance on hand of amount authorized, indicates that at endstate (TP 12) of the scenario, the quantity of munitions available for mission support was large and more than sufficient

to meet requirements. The Balance on Hand was at least one hundred percent of authorized for each munition type except (155MM, ATACMS, MLRS, and LONGBOW).

Key Munition Type	Initial State	Consumption		Endstate		
	Amt Authorized (Rounds) @ TPO	Total Amount Used (Rounds)	Total Amount Lost (Rounds)	Amt Authorized (Rounds) @ TP12	BOH @ TP12 (Rounds)	Percentage BOH of Authorized
155MM	31,050	26,121	877	26,666	19,651	74%
ATACMS	531	386	11	354	103	29%
MLRS	14,661	13,795	99	11,975	2,968	25%
HELLFIRE	720	0	0	573	688	120%
Longbow	1,920	966	3	1,538	1,217	79%
2.75RKT	13,680	0	0	11,062	13,456	122%
Patriot	120	2	0	109	118	108%
STINGER	1,368	195	19	1,104	1,106	100%
120MM	21,240	1,079	131	19,877	20,437	103%
25MM	357,000	1,163	49,531	290,165	299,924	103%
JAVELIN	378	0	9	313	351	112%
LAW	2,259	0	31	2,061	2,180	106%
TOWII	1,505	68	65	1,155	1,291	112%

Key Munition Status  
Table L-8

d) Table L-9 provides an overall summary of the additional supply indicators which help assess the sufficiency of munition availability. Although the indicators are shown by munition type, the individual indicators represent the presence (Yes) or absence (No) of that indicator for some specific unit(s) in the force at the end of a specific TP. Tables L-10 thru L-28 provide more detailed analyses of the aforementioned munition availability criteria.

Key Munition Type	BOH(>=75%)	Standard Replenishment BOH(50%-74%)	Emergency Replenishment BOH(1%-49%)	BOH(=0)
155MM	Yes	Yes	Yes	Yes
ATACMS	Yes	Yes	Yes	Yes
MLRS	Yes	Yes	Yes	Yes
HELLFIRE	Yes	No	No	Yes
Longbow	Yes	Yes	Yes	Yes
2.75RKT	Yes	No	No	Yes
Patriot	Yes	No	No	No
STINGER	Yes	Yes	Yes	No
120MM	Yes	Yes	No	Yes
25MM	Yes	Yes	No	No
JAVELIN	Yes	No	No	No
LAW	Yes	No	No	No
TOWII	Yes	No	No	No

Balance on Hand Status  
Table L-9

- Balance on Hand (>=75%) of Authorized: Initially all units start in this range since the amount authorized is equal to the balance on hand. BOHs which remain in this range maintain a sufficient quantity of authorized munitions and at no time throughout the scenario require supply replenishment.



- Balance on Hand (50%-74%) of Authorized: This column indicates whether or not the BOH by munition type at any unit fell to the indicated percentage range of the authorized amount. BOH in this range triggers "standard supply replenishment" requests.

-- For six of the munition types (HELLFIRE, 2.75RKT, PATRIOT, JAVELIN, LAW, and TOWII) no standard supply replenishment was required at any time during the scenario. No HELLFIRE, 2.75RKT, JAVELIN or LAW munition type was expended during this scenario. Also, no HELLFIRE, 2.75RKT or PATRIOT munition type was lost due to attrition of systems.

-- The other seven munition types (155MM, ATACMS, MLRS, LONGBOW, STINGER, 120MM, and 25MM) triggered standard resupply orders at some specific unit. Tables L-10 through L-16 identify the unit, the time period, and the sub-munition(s) which triggered a standard resupply order.

Unit Name	BOH(50%-74%)	Time Period(TP)	Sub-munition
A BTY 4TH BN 2ND BDE X CORPS ARTY	71%	TP 3 & 4	M795
B BTY 4TH BN 2ND BDE X CORPS ARTY	70%	TP 3 & 4	M795
C BTY 4TH BN 2ND BDE X CORPS ARTY	70%	TP 3 & 4	M795
A BTY 4TH BN 3RD BDE X CORPS ARTY	65%	TP 10	M549A1
	72%	TP 10	XM982
	63%	TP 11	M549A1
	62%	TP 11	XM982
B BTY 4TH BN 3RD BDE X CORPS ARTY	74%	TP 9	M549A1
	72%	TP 9	M864
	61%	TP 10 & 11	M549A1
	62%	TP 10	M864
	66%	TP 10	XM982
	52%	TP 11	M864
	58%	TP 11	XM982
C BTY 4TH BN 3RD BDE X CORPS ARTY	74%	TP 9	M549A1
	72%	TP 9	M864
	75%	TP 10	M549A1
	73%	TP 10	M864
	67%	TP 10	XM982
	61%	TP 11	M549A1
	51%	TP 11	M864
	58%	TP 11	XM982
1 BN-A 155SP BTRY (HIP) EXFOR DIVARTY	62%	TP 5 & 6	M107(CB)
	72%	TP 8	M107(CB)
	71%	TP 11	XM982
	64%	TP 12	M107(CB)
	68%	TP 12	M483A1
	60%	TP 12	M549A1
	75%	TP 12	XM864
1 BN-B 155SP BTRY (HIP) EXFOR DIVARTY	64%	TP 2	M107(CB)
	54%	TP 5	M107(CB)
	53%	TP 6	M107(CB)
1 BN-C 155SP BTRY (HIP) EXFOR DIVARTY	70%	TP 8	M864
	73%	TP 11	M549A1
	54%	TP 11	XM898
2 BN-A 155SP BTRY (HIP) EXFOR DIVARTY	67%	TP 3	M795
	58%	TP 9	XM898
	65%	TP 9	XM982
	66%	TP 10	M107(CB)
	74%	TP 10	M795
	67%	TP 10	M864
	64%	TP 10	XM982
2 BN-B 155SP BTRY (HIP) EXFOR DIVARTY	52%	TP 4	M864
	66%	TP 10	M107(CB)
	68%	TP 10	M864

Unit Name	BOH(50%-74%)	Time Period(TP)	Sub-munition
2 BN-C 155SP BTRY (HIP) EXFOR DIVARTY	67%	TP 3	M795
	58%	TP 9	M483A1
	66%	TP 10	M864
5 BN-A 155SP BTRY (HIP) EXFOR DIVARTY	64%	TP 3 & 4	M107(CB)
	68%	TP 11	XM982
	65%	TP 12	XM982
5 BN-B 155SP BTRY (HIP) EXFOR DIVARTY	74%	TP 10	M107(CB)

155MM Standard Replenishment  
Table L-10



Unit Name	BOH(50%-74%)	Time Period(TP)	Sub-munition
A BTY 3RD BN 1ST BDE X CORPS ARTY (MLRS)	62%	TP 8	ATACMS-I
	65%	TP 8	ATACMS-IA
	50%	TP 9	ATACMS-I
	53%	TP 9	ATACMS-IA
	51%	TP 11	ATACMS-I
	54%	TP 11	ATACMS-IA
	51%	TP 12	ATACMS-IA
A BTY 1ST BN 2ND BDE X CORPS ARTY (MLRS)	55%	TP 7	ATACMS-IA
B BTY 1ST BN 2ND BDE X CORPS ARTY (MLRS)	50%	TP 6	ATACMS-I
	51%	TP 6	ATACMS-IA

ATACMS Standard Replenishment  
Table L-11

Unit Name	BOH(50%-74%)	Time Period(TP)	Sub-munition
A BTY 1ST BN 1ST BDE X CORPS ARTY (MLRS)	51%	TP 3	M26
	74%	TP 7	M26
B BTY 1ST BN 1ST BDE X CORPS ARTY (MLRS)	73%	TP 3	M26
	73%	TP 8	M26
	58%	TP 9 & 10	M26
C BTY 1ST BN 1ST BDE X CORPS ARTY (MLRS)	51%	TP 2	M26
	59%	TP 3	ER-MLRS/GUIDE
	60%	TP 4	ER-MLRS/GUIDE
	66%	TP 6	ER-MLRS/GUIDE
	69%	TP 9	M26
	70%	TP 10	M26
B BTY 2ND BN 1ST BDE X CORPS ARTY (MLRS)	59%	TP 3,4,5,6	ER-MLRS/GUIDE
C BTY 2ND BN 1ST BDE X CORPS ARTY (MLRS)	59%	TP 3	ER-MLRS/GUIDE
	60%	TP 4,5,6	ER-MLRS/GUIDE
A BTY 3RD BN 1ST BDE X CORPS ARTY (MLRS)	68%	TP 11	M26
B BTY 3RD BN 1ST BDE X CORPS ARTY (MLRS)	59%	TP 3	ER-MLRS/GUIDE
	60%	TP 4,5,6	ER-MLRS/GUIDE
C BTY 3RD BN 1ST BDE X CORPS ARTY (MLRS)	74%	TP 12	M26
B BTY 1ST BN 2ND BDE X CORPS ARTY (MLRS)	74%	TP 7	ER-MLRS
	75%	TP 7	ER-MLRS/GUIDE
A BTY 1ST BN 3RD BDE X CORPS ARTY	74%	TP 9	M26
	75%	TP 10	M26
B BTY 1ST BN 3RD BDE X CORPS ARTY	52%	TP 9	ER-MLRS/GUIDE
A BTY 2ND BN 3RD BDE X CORPS ARTY	52%	TP 9	ER-MLRS/GUIDE
B BTY 2ND BN 3RD BDE X CORPS ARTY	55%	TP 9	ER-MLRS/GUIDE
	50%	TP 10	ER-MLRS/GUIDE
4 BN-A MLRS BTRY EXFOR DIVARTY	68%	TP 2,5,6	MSTAR
	67%	TP 3 & 4	MSTAR

MLRS Standard Replenishment  
Table L-12

Unit Name	BOH(50%-74%)	Time Period(TP)	Sub-munition
1BN/2BN CORPS AVN	64%	TP 7 & 9	Longbow
	52%	TP 8	Longbow
3RD ACR AIR CAV SQDN	54%	TP 6	Longbow
	71%	TP 7	Longbow
	68%	TP 8	Longbow
DIV CAV (RAH66D)	75%	TP 2	Longbow
	64%	TP 3	Longbow
	73%	TP 4	Longbow
	51%	TP 5	Longbow
1 BN ATK EXFOR AVN	56%	TP 1 & 7	Longbow
	61%	TP 9	Longbow

Longbow Standard Replenishment  
Table L-13

Unit Name	BOH(50%-74%)	Time Period(TP)	Sub-munition
B003IA1: AVENGER PLT 10th CORPS	73%	TP 11 & 12	STINGER
B003MA1: AVENGER PLT 10th CORPS	70%	TP 12	STINGER
B201EA1: BSFV PLT 3RD BDE EXFOR (IN)	70%	TP 10	STINGER
	68%	TP 11	STINGER
	69%	TP 12	STINGER
B201GA1: AVENGER PLT DIVARTY EXFOR	75%	TP 6	STINGER
	69%	TP 7	STINGER
	70%	TP 8	STINGER
B201HA1: AVENGER PLT DIVARTY EXFOR	72%	TP 7	STINGER
	73%	TP 8	STINGER
B201IA1: AVENGER PLT DIVARTY EXFOR	73%	TP 11	STINGER
	50%	TP 12	STINGER
B201JA1: BSFV PLT DIVARTY EXFOR	72%	TP 5	STINGER
	59%	TP 7	STINGER
	70%	TP 8	STINGER
	60%	TP 9	STINGER
	55%	TP 10	STINGER
	56%	TP 11	STINGER
B201KA1: AVENGER PLT 1 BDE EXFOR (MX)	75%	TP 12	STINGER

STINGER Standard Replenishment  
Table-14

Unit Name	BOH(50%-74%)	Time Period(TP)	Sub-munition
1ST BN 1ST BDE (MECH INF) TASK FORCE	53%	TP 2	PGMM
	74%	TP 11	M929
3RD BN 1ST BDE (ARMOR) TASK FORCE	63%	TP 12	PGMM
2ND BN 3RD BDE (INF) TASK FORCE	62%	TP 5 & 6	PGMM
	60%	TP 7	PGMM

120MM Standard Replenishment  
Table L-15

Unit Name	BOH(50%-74%)	Time Period(TP)	Sub-munition
3RD BN 1ST BDE (ARMOR) TASK FORCE	74%	TP 12	25MM

25MM Standard Replenishment  
Table L-16

- Balance on Hand (1%-49%) of Authorized: This column indicates whether or not the BOH by munition type at any unit fell to the indicated percentage range of the authorized amount. BOH in this range triggers "emergency supply replenishment" requests. Five of the munition types (155MM, ATACMS, MLRS, LONGBOW, and STINGER) required emergency resupply. Tables L-17 through L-21 depict specific unit, time period, and sub-munition type which generate an emergency resupply request.

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
A BTY 4TH BN 2ND BDE X CORPS ARTY	26%	TP 1	M107(CB)
	9%	TP 2	M864
	25%	TP 3 & 4	M483A1
	25%	TP 3	M549A1
	25%	TP 3	XM982
	34%	TP 3-12	M864
B BTY 4TH BN 2ND BDE X CORPS ARTY	26%	TP 1	M107(CB)
	9%	TP 2	M864
	25%	TP 3 & 4	M483A1
	25%	TP 3-9,12	M549A1
	26%	TP 10 & 11	M549A1
	34%	TP 3-12	M864

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
C BTY 4TH BN 2ND BDE X CORPS ARTY	9% 36% 34% 25% 26%	TP 2 TP 3 & 4 TP 3-12 TP 4-10,12 TP 11	M864 M107(CB) M864 M483A1 M483A1
A BTY 4TH BN 3RD BDE X CORPS ARTY	10% 22% 34% 24% 31% 16% 22% 15% 24% 28% 4% 17% 9% 48% 43%	TP 6 TP 7 TP 7 TP 7 TP 7 TP 8 TP 8 TP 8 & 11 TP 8 TP 9 TP 9,10,11 TP 10 TP 11 TP 12 TP 12	M864 M483A1 M549A1 XM898 XM982 M483A1 M549A1 XM898 XM982 M483A1 XM898 M483A1 M483A1 M549A1 XM982
B BTY 4TH BN 3RD BDE X CORPS ARTY	26% 23% 34% 24% 23% 32% 16% 21% 14% 13% 23% 27% 3% 15% 9% 4% 47% 42% 4% 41%	TP 5 & 6 TP 7 TP 7 TP 7 TP 7 TP 7 TP 8 TP 8 TP 8 TP 8 TP 8 TP 9 & 10 TP 9 & 10 TP 11 TP 11 TP 12 TP 12 TP 12 TP 12	M107(CB) M483A1 M549A1 M864 XM898 XM982 M483A1 M549A1 M864 XM898 XM982 M483A1 XM898 M483A1 XM898 M483A1 M549A1 M864 XM898 XM982
C BTY 4TH BN 3RD BDE X CORPS ARTY	17% 22% 34% 24% 22% 32% 6% 12% 20% 14% 17% 23% 5% 2% 41% 15% 27% 46% 40% 22% 41%	TP 7 TP 7 TP 7 TP 7 TP 7 & 10 TP 7 TP 8 & 9 TP 8 TP 8 TP 8 TP 8 TP 8 TP 9 TP 9 & 10 TP 10,11,12 TP 11 TP 11 TP 12 TP 12 TP 12	M107(CB) M483A1 M549A1 M864 XM898 XM982 M107(CB) M483A1 M549A1 M864 XM898 XM982 M483A1 XM898 M107(CB) M483A1 XM898 M549A1 M864 XM898 XM982
1 BN-A 155SP BTRY (HIP) EXFOR DIVARTY	37% 41% 22% 3%	TP 2 TP 5 & 6 TP 7 TP 11 & 12	M107(CB) M483A1 M549A1 XM898

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
1 BN-B 155SP BTRY (HIP) EXFOR DIVARTY	40%	TP 2	M107(CB)
	23%	TP 7	M549A1
	8%	TP 8	M483A1
	47%	TP 11	M107(CB)
	30%	TP 11	XM898
	39%	TP 12	M107(CB)
	14%	TP 12	XM898
1 BN-C 155SP BTRY (HIP) EXFOR DIVARTY	48%	TP 7	XM898
	10%	TP 8	M483A1
	29%	TP 10	M107(CB)
	1%	TP 11 & 12	M107(CB)
	37%	TP 12	XM898
2 BN-A 155SP BTRY (HIP) EXFOR DIVARTY	38%	TP 4	M107(CB)
	2%	TP 4	M549A1
	36%	TP 4	M864
	37%	TP 5	M107(CB)
	27%	TP 7	M864
	33%	TP 7	XM982
	37%	TP 8	M483A1
2 BN-B 155SP BTRY (HIP) EXFOR DIVARTY	39%	TP 3	M549A1
	26%	TP 7	M864
	36%	TP 7	XM982
	40%	TP 8	M483A1
	37%	TP 8 & 9	XM982
	28%	TP 9	M107(CB)
2 BN-C 155SP BTRY (HIP) EXFOR DIVARTY	38%	TP 3	M483A1
	36%	TP 7,8,9	XM982
5 BN-B 155SP BTRY (HIP) EXFOR DIVARTY	49%	TP 11	XM982
	48%	TP 12	XM982

155MM Emergency Replenishment  
Table L-17

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
A BTY 3RD BN 1ST BDE X CORPS ARTY	34%	TP 1-7	ATACMS-I
	11%	TP 5,6,7	ATACMS-II
	36%	TP 6 & 7	ATACMS-IA
	20%	TP 8	ATACMS-II
	17%	TP 9 & 11	ATACMS-II
	47%	TP 10	ATACMS-I
	49%	TP 10	ATACMS-IA
	15%	TP 10	ATACMS-II
	48%	TP 12	ATACMS-I
	16%	TP 12	ATACMS-II
B BTY 3RD BN 1ST BDE X CORPS ARTY	34%	TP 1-7	ATACMS-I
	11%	TP 5,6,7	ATACMS-II
	36%	TP 6 & 7	ATACMS-IA
	41%	TP 8	ATACMS-I
	43%	TP 8	ATACMS-IA
	13%	TP 8-11	ATACMS-II
	38%	TP 9	ATACMS-I
	41%	TP 9 & 11	ATACMS-IA
	39%	TP 10	ATACMS-I
	42%	TP 10	ATACMS-IA
	44%	TP 12	ATACMS-I
	46%	TP 12	ATACMS-IA
	15%	TP 12	ATACMS-II
C BTY 3RD BN 1ST BDE X CORPS ARTY	34%	TP 1-7	ATACMS-I
	11%	TP 5,6,7	ATACMS-II
	36%	TP 6 & 7	ATACMS-IA
	42%	TP 8	ATACMS-I
	45%	TP 8	ATACMS-IA
	14%	TP 8	ATACMS-II
	40%	TP 9	ATACMS-I
	43%	TP 9	ATACMS-IA
	13%	TP 9-12	ATACMS-II
	39%	TP 10,11,12	ATACMS-I
	42%	TP 10 & 11	ATACMS-IA
	41%	TP 12	ATACMS-IA

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
A BTY 1ST BN 2ND BDE X CORPS ARTY	34%	TP 1-5	ATACMS-I
	11%	TP 5	ATACMS-II
	38%	TP 6	ATACMS-II
	47%	TP 7 & 8	ATACMS-I
	16%	TP 7 & 8	ATACMS-II
	49%	TP 8	ATACMS-IA
	38%	TP 9 & 10	ATACMS-I
	39%	TP 9 & 10	ATACMS-IA
	13%	TP 9 & 10	ATACMS-II
	35%	TP 11	ATACMS-I
	36%	TP 11	ATACMS-IA
	12%	TP 11	ATACMS-II
	33%	TP 12	ATACMS-I
	34%	TP 12	ATACMS-IA
	11%	TP 12	ATACMS-II
B BTY 1ST BN 2ND BDE X CORPS ARTY	34%	TP 1-5	ATACMS-I
	11%	TP 5	ATACMS-II
	17%	TP 6	ATACMS-II
	33%	TP 7	ATACMS-II
	47%	TP 8	ATACMS-I
	48%	TP 8	ATACMS-IA
	16%	TP 8	ATACMS-II
	37%	TP 9	ATACMS-I
	38%	TP 9	ATACMS-IA
	13%	TP 9 & 10	ATACMS-II
	38%	TP 10	ATACMS-I
	39%	TP 10	ATACMS-IA
	36%	TP 11	ATACMS-I
	36%	TP 11	ATACMS-IA
	12%	TP 11	ATACMS-II
	34%	TP 12	ATACMS-I
	35%	TP 12	ATACMS-IA
	11%	TP 12	ATACMS-II
C BTY 1ST BN 2ND BDE X CORPS ARTY	34%	TP 1-5	ATACMS-I
	11%	TP 5	ATACMS-II
A BTY 1ST BN 3RD BDE X CORPS ARTY	34%	TP 5,6,7,9	ATACMS-I
	11%	TP 5,6,7,9	ATACMS-II
	35%	TP 8,10,11,12	ATACMS-I
	12%	TP 8,10,11,12	ATACMS-II

ATACMS Emergency Replenishment  
Table L-18

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
A BTY 1ST BN 1ST BDE X CORPS ARTY	25%	TP 3	ER-MLRS
	26%	TP 3,4,5,6	ER-MLRS/Guide
	50%	TP 8	M26
	12%	TP 9 & 10	M26
B BTY 1ST BN 1ST BDE X CORPS ARTY	25%	TP 3	ER-MLRS
	26%	TP 4,5,6,7	ER-MLRS/Guide
	19%	TP 12	M26
C BTY 1ST BN 1ST BDE X CORPS ARTY	34%	TP 2	ER-MLRS/Guide
	25%	TP 3	ER-MLRS
	48%	TP 3	M26
	2%	TP 7,8,9,11,12	ER-MLRS/Guide
A BTY 2ND BN 1ST BDE X CORPS ARTY	11%	TP 2	ER-MLRS/Guide
	25%	TP 3,4,5,6	ER-MLRS
	36%	TP 3,4,5,6	ER-MLRS/Guide
B BTY 2ND BN 1ST BDE X CORPS ARTY	34%	TP 2	ER-MLRS/Guide
	25%	TP 3	ER-MLRS
	7%	TP 4,5,6	ER-MLRS
	1%	TP 7,9,11,12	ER-MLRS/Guide
	17%	TP 11	M26
C BTY 2ND BN 1ST BDE X CORPS ARTY	34%	TP 2	ER-MLRS/Guide
	25%	TP 3,4,5,6	ER-MLRS
	2%	TP 7,8,9,11,12	ER-MLRS/Guide

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
A BTY 3RD BN 1ST BDE X CORPS ARTY	25% 26% 7%	TP 3,4,5,6 TP 3,4,5,6 TP 7	ER-MLRS ER-MLRS/Guide ER-MLRS
B BTY 3RD BN 1ST BDE X CORPS ARTY	34% 25% 37% 4%	TP 2 TP 3-7 TP 7 TP 12	ER-MLRS/Guide ER-MLRS ER-MLRS/Guide M26
C BTY 3RD BN 1ST BDE X CORPS ARTY	25% 26% 3%	TP 3-7 TP 3,4,5,6 TP 7	ER-MLRS ER-MLRS/Guide ER-MLRS/Guide
A BTY 1ST BN 2ND BDE X CORPS ARTY	25% 25% 35% 35% 36% 28% 28% 26% 26%	TP 3,4,5,12 TP 3,4,5,12 TP 7 & 8 TP 7 TP 8 TP 9 & 10 TP 9 & 10 TP 11 TP 11	ER-MLRS ER-MLRS/Guide ER-MLRS ER-MLRS/Guide ER-MLRS/Guide ER-MLRS ER-MLRS/Guide ER-MLRS ER-MLRS/Guide
B BTY 1ST BN 2ND BDE X CORPS ARTY	25% 25% 37% 37% 35% 35% 28% 28% 27% 27%	TP 3,4,5,12 TP 3,4,5,12 TP 6 TP 6 TP 8 TP 8 TP 9 & 10 TP 9 & 10 TP 11 TP 11	ER-MLRS ER-MLRS/Guide ER-MLRS ER-MLRS/Guide ER-MLRS ER-MLRS/Guide ER-MLRS ER-MLRS/Guide ER-MLRS ER-MLRS/Guide
C BTY 1ST BN 2ND BDE X CORPS ARTY	36% 25%	TP 3,4,5 TP 3,4,5	ER-MLRS ER-MLRS/Guide
A BTY 2ND BN 2ND BDE X CORPS ARTY	25% 25% 26% 26% 27% 27%	TP 3,4,5 TP 3,4,5 TP 6,8-12 TP 6,8-12 TP 7 TP 7	ER-MLRS ER-MLRS/Guide ER-MLRS ER-MLRS/Guide ER-MLRS ER-MLRS/Guide
B BTY 2ND BN 2ND BDE X CORPS ARTY	25% 25% 26% 26%	TP 3,4,5 TP 3,4,5 TP 6-12 TP 6-12	ER-MLRS ER-MLRS/Guide ER-MLRS ER-MLRS/Guide
C BTY 2ND BN 2ND BDE X CORPS ARTY	25% 25% 28% 28% 27% 27% 26% 26%	TP 3,4,5 TP 3,4,5 TP 6 & 7 TP 6 & 7 TP 8 TP 8 TP 9-12 TP 9-12	ER-MLRS ER-MLRS/Guide ER-MLRS ER-MLRS/Guide ER-MLRS ER-MLRS/Guide ER-MLRS ER-MLRS/Guide
A BTY 1ST BN 3RD BDE X CORPS ARTY	42% 35% 26% 27% 46% 37% 32%	TP 7 TP 8 TP 9 TP 9 TP 10 TP 11 TP 12	ER-MLRS/Guide ER-MLRS/Guide ER-MLRS ER-MLRS/Guide ER-MLRS/Guide ER-MLRS/Guide ER-MLRS/Guide
B BTY 1ST BN 3RD BDE X CORPS ARTY	42% 34% 25% 46% 36% 32%	TP 7 TP 8 TP 9 TP 10 TP 11 TP 12	ER-MLRS/Guide ER-MLRS/Guide ER-MLRS ER-MLRS/Guide ER-MLRS/Guide ER-MLRS/Guide

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
C BTY 1ST BN 3RD BDE X CORPS ARTY	42%	TP 7	ER-MLRS/Guide
	38%	TP 8	ER-MLRS/Guide
	28%	TP 9	ER-MLRS
	29%	TP 9	ER-MLRS/Guide
	37%	TP 9	M26
	48%	TP 10	ER-MLRS/Guide
	36%	TP 10	M26
	38%	TP 11	ER-MLRS/Guide
A BTY 2ND BN 3RD BDE X CORPS ARTY	32%	TP 12	ER-MLRS/Guide
	42%	TP 7	ER-MLRS/Guide
	14%	TP 7	M26
	34%	TP 8	ER-MLRS/Guide
	25%	TP 9	ER-MLRS
	45%	TP 10	ER-MLRS/Guide
	38%	TP 11	ER-MLRS/Guide
	32%	TP 12	ER-MLRS/Guide
B BTY 2ND BN 3RD BDE X CORPS ARTY	41%	TP 7	ER-MLRS/Guide
	35%	TP 8	ER-MLRS/Guide
	26%	TP 9	ER-MLRS
	45%	TP 11	ER-MLRS/Guide
	28%	TP 11	M26
	33%	TP 12	ER-MLRS/Guide
C BTY 2ND BN 3RD BDE X CORPS ARTY	42%	TP 7	ER-MLRS/Guide
	44%	TP 7	M26
	34%	TP 8	ER-MLRS/Guide
	30%	TP 9	ER-MLRS/Guide
	44%	TP 10	ER-MLRS/Guide
	38%	TP 11	ER-MLRS/Guide
	32%	TP 12	ER-MLRS/Guide
4 BN-A MLRS BTY EXFOR DIVARTY	42%	TP 7	ER-MLRS/Guide
	34%	TP 8	ER-MLRS/Guide
	33%	TP 9	ER-MLRS/Guide
	32%	TP 9	M26
	21%	TP 10	ER-MLRS/Guide
	33%	TP 10	M26
	12%	TP 11	ER-MLRS/Guide
	6%	TP 12	ER-MLRS/Guide

MLRS Emergency Replenishment  
Table L-19

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
3RD ACR AIR CAV SQDN	11%	TP 9	Longbow
	26%	TP 10	Longbow
	22%	TP 11	Longbow
	20%	TP 12	Longbow
B20G00H:DIV CAV (RAH66D)	45%	TP 6	Longbow
	41%	TP 7	Longbow
1 BN ATK EXFOR AVN	50%	TP 6	Longbow
	42%	TP 8	Longbow
	19%	TP 10	Longbow

Longbow Emergency Replenishment  
Table L-20

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
AVENGER PLT 1 BDE EXFOR (MX)	41%	TP 12	STINGER

STINGER Emergency Replenishment  
Table L-21

- Zero Balance on Hand: This column indicates whether or not the BOH by munition type at any unit fell to zero. Seven of the munition types (155MM, ATACMS, MLRS, HELLFIRE, Longbow, 2.75RKT, and 120MM) experience a zero balance on hand. Tables L-22 through L-28 depict specific unit, time period, and sub-munition type which experience a zero balance on hand.

Unit Name	BOH(=0)	Time Period(TP)	Sub-munition
A BTY 4TH BN 2ND BDE X CORPS ARTY	0% 0% 0% 0%	TP 1,2,4-12 TP 2-12 TP 2,4-12 TP 2,5-12	XM982 M107(CB) M549A1 M483A1
B BTY 4TH BN 2ND BDE X CORPS ARTY	0% 0% 0% 0%	TP 1-12 TP 2-12 TP 2,5-12 TP 2	XM982 M107(CB) M483A1 M549A1
C BTY 4TH BN 2ND BDE X CORPS ARTY	0% 0% 0% 0%	TP 1-12 TP 2,5-12 TP 2 & 3 TP 2	XM982 M107(CB) M483A1 M549A1
A BTY 4TH BN 3RD BDE X CORPS ARTY	0% 0% 0%	TP 5-12 TP 7-12 TP 12	M107(CB) M864 M483A1
B BTY 4TH BN 3RD BDE X CORPS ARTY	0%	TP 7-12	M107(CB)
C BTY 4TH BN 3RD BDE X CORPS ARTY	0%	TP 12	M483A1
1 BN-C 155SP BTRY EXFOR DIVARTY	0%	TP 2	M107(CB)
2 BN-A 155SP BTRY EXFOR DIVARTY	0% 0%	TP 3 TP 3	M483A1 M107(CB)
2 BN-B 155SP BTRY EXFOR DIVARTY	0% 0%	TP 3 TP 3	M483A1 M107(CB)
2 BN-C 155SP BTRY EXFOR DIVARTY	0% 0%	TP 3&10 TP 3	M107(CB) M549A1
5 BN-C 155SP BTRY EXFOR DIVARTY	0%	TP 11 & 12	XM982

155MM Zero Balance  
Table L-22

Unit Name	BOH(=0)	Time Period(TP)	Sub-munition
A BTY 3RD BN 1ST BDE X CORPS ARTY	0%	TP 5-12	ATACMS-IIA
B BTY 3RD BN 1ST BDE X CORPS ARTY	0%	TP 5-12	ATACMS-IIA
C BTY 3RD BN 1ST BDE X CORPS ARTY	0%	TP 5-12	ATACMS-IIA
A BTY 1ST BN 2ND BDE X CORPS ARTY	0%	TP 5-12	ATACMS-IIA
B BTY 1ST BN 2ND BDE X CORPS ARTY	0%	TP 5-12	ATACMS-IIA
C BTY 1ST BN 2ND BDE X CORPS ARTY	0%	TP 5	ATACMS-IIA

ATACMS Zero Balance  
Table L-23

Unit Name	BOH(=0)	Time Period(TP)	Sub-munition
A BTY 1ST BN 1ST BDE X CORPS ARTY (MLRS)	0% 0% 0%	TP 1,2,4-12 TP 7-12 TP 11 & 12	ER-MLRS ER-MLRS/Guide M26
B BTY 1ST BN 1ST BDE X CORPS ARTY (MLRS)	0% 0% 0%	TP 1,2,4-12 TP 1,7-12 TP 11	ER-MLRS ER-MLRS/Guide M26
C BTY 1ST BN 1ST BDE X CORPS ARTY (MLRS)	0% 0% 0%	TP 1,2,4-12 TP 10 TP 11 & 12	ER-MLRS ER-MLRS/Guide M26
A BTY 2ND BN 1ST BDE X CORPS ARTY (MLRS)	0% 0% 0%	TP 1,2,7-12 TP 1,7-12 TP 11 & 12	ER-MLRS ER-MLRS/Guide M26
B BTY 2ND BN 1ST BDE X CORPS ARTY (MLRS)	0% 0% 0%	TP 1,2,7-12 TP 8 & 10 TP 12	ER-MLRS ER-MLRS/Guide M26
C BTY 2ND BN 1ST BDE X CORPS ARTY (MLRS)	0% 0% 0%	TP 1,2,7-12 TP 10 TP 11 & 12	ER-MLRS ER-MLRS/Guide M26



Unit Name	BOH(=0)	Time Period(TP)	Sub-munition
A BTY 3RD BN 1ST BDE X CORPS ARTY (MLRS)	0% 0% 0%	TP 1,2,8-12 TP 7-12 TP 12	ER-MLRS ER-MLRS/Guide M26
B BTY 3RD BN 1ST BDE X CORPS ARTY (MLRS)	0% 0%	TP 1,2,8-12 TP 8-12	ER-MLRS ER-MLRS/Guide
C BTY 3RD BN 1ST BDE X CORPS ARTY (MLRS)	0% 0%	TP 1,2,8-12 TP 8-12	ER-MLRS ER-MLRS/Guide
A BTY 1ST BN 2ND BDE X CORPS ARTY	0% 0%	TP 1 & 2 TP 1 & 2	ER-MLRS ER-MLRS/Guide
B BTY 1ST BN 2ND BDE X CORPS ARTY	0% 0%	TP 1 & 2 TP 1 & 2	ER-MLRS ER-MLRS/Guide
C BTY 1ST BN 2ND BDE X CORPS ARTY	0% 0%	TP 1 & 2 TP 1 & 2	ER-MLRS ER-MLRS/Guide
A BTY 2ND BN 2ND BDE X CORPS ARTY	0% 0%	TP 1 & 2 TP 1 & 2	ER-MLRS ER-MLRS/Guide
B BTY 2ND BN 2ND BDE X CORPS ARTY	0% 0%	TP 1 & 2 TP 1 & 2	ER-MLRS ER-MLRS/Guide
C BTY 2ND BN 2ND BDE X CORPS ARTY	0% 0%	TP 1 & 2 TP 1 & 2	ER-MLRS ER-MLRS/Guide
A BTY 1ST BN 3RD BDE X CORPS ARTY	0% 0%	TP 7,8,10,11,12 TP 11 & 12	ER-MLRS M26
B BTY 1ST BN 3RD BDE X CORPS ARTY	0% 0%	TP 7,8,10,11,12 TP 8-12	ER-MLRS M26
C BTY 1ST BN 3RD BDE X CORPS ARTY	0% 0%	TP 7,8,10,11,12 TP 11 & 12	ER-MLRS M26
A BTY 2ND BN 3RD BDE X CORPS ARTY	0% 0%	TP 7,8,10,11,12 TP 8,9,10,12	ER-MLRS M26
B BTY 2ND BN 3RD BDE X CORPS ARTY	0% 0%	TP 7,8,10,11,12 TP 11 & 12	ER-MLRS M26
C BTY 2ND BN 3RD BDE X CORPS ARTY	0% 0%	TP 7-12 TP 8-12	ER-MLRS M26
4 BN-A MLRS BTY EXFOR DIVARTY	0% 0% 0%	TP 1-12 TP 7-12 TP 11 & 12	ER-MLRS M26 MSTAR

MLRS Zero Balance  
Table L-24

Unit Name	BOH(=0)	Time Period(TP)	Sub-munition
B20G00H:DIV CAV SQD (RAH66)	0%	TP 8,9,12	HELLFIRE

HELLFIRE Zero Balance  
Table L-25

Unit Name	BOH(=0)	Time Period(TP)	Sub-munition
B20G00H:DIV CAV SQD (RAH66)	0%	TP 8 & 9	Longbow

Longbow Zero Balance  
Table L-26

Unit Name	BOH(=0)	Time Period(TP)	Sub-munition
B20G00H:DIV CAV SQD (RAH66)	0%	TP 8,9,12	2.75RKT

2.75RKT Zero Balance  
Table L-27

Unit Name	BOH(=0)	Time Period(TP)	Sub-munition
1ST BN 1ST BDE (MECH INF) TASK FORCE	0%	TP 11	PGMM

120MM Zero Balance  
Table L-28

(c) Problems. Of the 2423.35 stons ordered, via standard resupply, 102.10 stons were shipped (approximately 4.21 percent). Problems in unfilled orders are primarily associated with unavailable available stocks for replenishment of class V (reference table L-29).

TP	REQUESTING UNIT	SUPPLY UNIT	SUPPLY TYPE	AMOUNT REQUESTED (Rounds)	AMOUNT SHIPPED (Rounds)	AMOUNT SHORTED (#)	TRUCKS AVAIL	AVAIL STOCKS (Rounds)
1	B20S00H	B2DAVSC	Longbow	63	16	74.6	3	0
1	B20L00H	B2UAVSC	Longbow	172	18	89.53	7	0
1	B20LOOH	B2UAVSC	B30MM	9,383	3,024	67.77	7	0
2	B200BH2	B200AFC	M107 (CB)	203.13	115.27	43.25	15.8	0
3	B200EH2	B200BFC	M107 (CB)	232.29	117.41	49.46	13.8	0
4	B200DH2	B200BFC	M107 (CB)	201	5.16	97.43	15.5	0
4	B200DH2	B200BFC	M549A1	115.99	33.7	70.95	0	28.1
4	B200FH2	B200BFC	M107 (CB)	314.04	6.03	98.08	15.5	0
4	B200DH2	B200BFC	M864	185.53	66.14	64.35	0	219.6
4	B200FH2	B200BFC	M107 (CB)	307.28	267.6	12.91	15.5	0
4	B200DH2	B200BFC	M549A1	133.29	2.81	97.89	0	28.1
6	B20L00H	B2UAVSC	Longbow	140.35	80.14	42.9	4.8	0
7	B200CH2	B200AFC	XM982	139.48	108.59	22.15	13.7	0
7	B200DH2	B200BFC	XM982	147.8	129.81	12.17	15.3	0
7	B200CH2	B200AFC	M864	130.62	99.77	23.62	13.7	0
9	B200EH2	B200BFC	XM982	135.03	134.84	0.14	16.7	0
9	B200EH2	B200BFC	M107 (CB)	219.12	118.52	45.91	16.7	0
10	B20G00H	B2DAVSC	2.75RKT	48.83	4.56	90.66	2.9	0
10	B20L00H	B2UAVSC	Longbow	265.79	148.69	44.06	7	0
10	B200CH2	B200AFC	M107 (CB)	103.55	84.62	18.28	17.5	0
10	B200FH2	B200BFC	M864	60.58	42.64	29.61	15.4	0
11	B200JH2	B200CFC	XM982	121.7	116.06	4.63	11.8	0
11	B200CH2	B200AFC	XM898	130.64	99.16	24.1	16.2	0
11	B20G00H	B2DAVSC	HELLFIRE	1.27	0.8	37.01	4	0
11	B2011MX	B2011FC	PGMM	33.84	0.59	98.26	8.4	0
11	B200FH2	B200BFC	M107 (CB)	313.14	259.75	17.05	15.4	0
11	B2011MX	B2011FC	M929	262.04	200	23.68	10	0
12	B2013AR	B2013FC	25MM	2,579.33	2,430	5.79	6.4	0
	TOTAL			16,144	7,731	52.11		276

Problems Filling Maneuver Unit Orders, Class V  
Table L-29

- The problems of unfilled orders have rippled into maneuver units. In the table below, supply type-maneuver unit combinations that have a zero BOH are presented. The table has been coded: 0 - time and distance problems; 1 - unsupported materiel; 2 - insufficient replenishment stockages; and 3 - unavailable transporters. Generally, once a unit experienced a zero BOH, the zero BOH continued to the end of the scenario.

- From table L-30 below, zero BOH are attributed to shortages of transporters, shortages of replenishments, and large time-distances between maneuver units and their supporting CSS unit. The reader is cautioned regarding the "0"; some maneuver units consume everything on-hand, and cannot be provided a supply type fast enough regardless of the speed of the CSS system.

SUPPLY TYPE	MANEUVER UNIT	TP														# TPs
		0	1	2	3	4	5	6	7	8	9	10	11	12		
2.75RKT	B20G00H									0	0				2	
ATACMS-I	B00A7M2						1	1	1	1	1	1	1	1	8	
ATACMS-I	B00A8M2						1	1	1	1	1	1	1	1	8	
ATACMS-I	B00A9M2						1	1	1	1	1	1	1	1	8	
ATACMS-I	B00B1M2						1	1	1	1	1	1	1	1	8	
ATACMS-I	B00B2M2						1	1	1	1	1	1	1	1	8	
ATACMS-I	B00B3M2						1								1	
ER-MLRS	B00A1M2		0	0		0	0	0	0	0	0	0	0	0	11	
ER-MLRS	B00A2M2		0	0		0	0	0	0	0	0	0	0	0	11	
ER-MLRS	B00A3M2		0	0		0	0	0	0	0	0	0	0	0	11	
ER-MLRS	B00A4M2		0	0					0	0	0	0	0	0	8	
ER-MLRS	B00A5M2		0	0					0	0	0	0	0	0	8	
ER-MLRS	B00A6M2		0	0					0	0	0	0	0	0	8	
ER-MLRS	B00A7M2		0	0						0	0	0	0	0	7	
ER-MLRS	B00A8M2		0	0						0	0	0	0	0	7	
ER-MLRS	B00A9M2		0	0						0	0	0	0	0	7	
ER-MLRS	B00B1M2		0	0											2	
ER-MLRS	B00B2M2		0	0											2	
ER-MLRS	B00B3M2		0	0											2	
ER-MLRS	B00B4M2		0	0											2	
ER-MLRS	B00B5M2		0	0											2	
ER-MLRS	B00B6M2		0	0											2	
ER-MLRS	B00C1M2								0	0		0	0	0	5	
ER-MLRS	B00C2M2								0	0		0	0	0	5	
ER-MLRS	B00C3M2								0	0		0	0	0	5	
ER-MLRS	B00C4M2								0	0		0	0	0	5	
ER-MLRS	B00C5M2								0	0		0	0	0	5	
ER-MLRS	B00C6M2								0	0	0	0	0	0	6	
ER-MLRS	B200GM2		0	0	0	0	0	0	0	0	0	0	0	0	12	
ER-MLRS/Guide	B00A1M2								0	0	0	0	0	0	6	
ER-MLRS/Guide	B00A2M2		0						0	0	0	0	0	0	7	
ER-MLRS/Guide	B00A3M2											0			1	
ER-MLRS/Guide	B00A4M2		0						0	0	0	0	0	0	7	
ER-MLRS/Guide	B00A5M2									0		0			2	
ER-MLRS/Guide	B00A6M2											0			1	
ER-MLRS/Guide	B00A7M2								0	0	0	0	0	0	6	
ER-MLRS/Guide	B00A8M2									0	0	0	0	0	5	
ER-MLRS/Guide	B00A9M2									0	0	0	0	0	5	
ER-MLRS/Guide	B00B1M2		0	0											2	
ER-MLRS/Guide	B00B2M2		0	0											2	
ER-MLRS/Guide	B00B3M2		0	0											2	

SUPPLY TYPE	MANEUVER UNIT	TP													# TPs
		0	1	2	3	4	5	6	7	8	9	10	11	12	
ER-MLRS/Guide	B00B4M2		0	0											2
ER-MLRS/Guide	B00B5M2		0	0											2
ER-MLRS/Guide	B00B6M2		0	0											2
HELLFIRE	B20G00H									0	0			0	3
Longbow	B20G00H									0	0				2
M107 (CB)	B00BAH2			0	0	0	0	0	0	0	0	0	0	0	11
M107 (CB)	B00BBH2			0	0	0	0	0	0	0	0	0	0	0	11
M107 (CB)	B00BCH2			0			0	0	0	0	0	0	0	0	9
M107 (CB)	B00CAH2						0	0	0	0	0	0	0	0	8
M107 (CB)	B00CBH2								0	0	0	0	0	0	6
M107 (CB)	B200CH2			0											1
M107 (CB)	B200DH2				0										1
M107 (CB)	B200EH2				0										1
M107 (CB)	B200FH2				0							0			2
M26	B00A1M2												0	0	2
M26	B00A2M2												0		1
M26	B00A3M2												0	0	2
M26	B00A4M2												0	0	2
M26	B00A5M2													0	1
M26	B00A6M2												0	0	2
M26	B00A7M2													0	1
M26	B00C1M2												0	0	2
M26	B00C2M2									0	0	0	0	0	5
M26	B00C3M2												0	0	2
M26	B00C4M2									0	0	0	0	0	5
M26	B00C5M2									0	0	0		0	4
M26	B00C6M2									0	0	0	0	0	5
M26	B200GM2												0	0	2
M483A1	B00BAH2			0			0	0	0	0	0	0	0	0	9
M483A1	B00BBH2			0			0	0	0	0	0	0	0	0	9
M483A1	B00BCH2			0	0										2
M483A1	B00CAH2													0	1
M483A1	B00CCH2													0	1
M483A1	B200DH2				0										1
M483A1	B200EH2				0										1
M549A1	B00BAH2			0		0	0	0	0	0	0	0	0	0	10
M549A1	B00BBH2			0											1
M549A1	B00BCH2			0											1
M549A1	B200FH2				0										1
M864	B00CAH2								0	0	0	0	0	0	6

SUPPLY TYPE	MANEUVER UNIT	TP													
		0	1	2	3	4	5	6	7	8	9	10	11	12	# TPs
MSTAR	B200GM2								0	0	0	0	0	0	6
PGMM	B2012MX												1		1
STAFF	B2011DC												1	1	2
STAFF	B2011MX												1		1
XM982	B00BAH2		0	0		0	0	0	0	0	0	0	0	0	11
XM982	B00BBH2		0	0	0	0	0	0	0	0	0	0	0	0	12
XM982	B00BCH2		0	0	0	0	0	0	0	0	0	0	0	0	12
XM982	B200LH2												1	1	2
Total		0	27	35	12	10	20	19	35	48	42	48	55	59	

Causes for Zero BOH  
Table L-30

To quantify a measure of risk, the maximum consumption of class V by a unit for any TP is compared with the current BOH for each TP; if the value is less than one, the unit would exhaust its supplies prior to repeating the activities of this "maximum" TP. Where "at risk" is less than one TP of supply, class V was generally provided to maneuver units without placing them "at risk." Fifty-one maneuver units were "at risk." See Table L-31.

MANEUVER UNIT	TP													
	0	1	2	3	4	5	6	7	8	9	10	11	12	# of TPs
B00A1M2		2	2	2	2	2	2	2	2	3	3	3	3	12
B00A2M2		2	2	2	2	2	2	2	2	2	2	3	3	12
B00A3M2		2	3	3	2	2	2	2	2	2	2	3	3	12
B00A4M2		2	2	2	2	2	2	2	2	2	2	3	3	12
B00A5M2		2	2	2	2	2	2	2	2	2	2	3	3	12
B00A6M2		2	2	2	2	2	2	2	2	2	2	3	3	12
B00A7M2		3	3	3	3	5	6	6	6	6	6	7	7	12
B00A8M2		3	3	3	3	5	6	6	6	6	6	6	7	12
B00A9M2		3	3	3	3	5	6	6	6	6	6	6	6	12
B00B1M2		3	3	3	3	5	6	6	6	6	6	6	6	12
B00B2M2		3	3	3	3	5	6	6	6	6	6	6	6	12
B00B3M2		3	3	3	3	5								5
B00B4M2		2	2	2	2	2	2	2	2	2	2	2	2	12
B00B5M2		2	2	2	2	2	2	2	2	2	2	2	2	12
B00B6M2		2	2	2	2	2	2	2	2	2	2	2	2	12
B00BAH2		2	5	5	5	5	5	5	5	5	5	5	5	12
B00BBH2		2	5	5	5	5	5	5	5	5	5	5	5	12
B00BCH2		1	5	5	5	5	5	5	5	5	5	5	5	12
B00C1M2						2	2	4	4	4	4	5	5	8
B00C2M2								2	3	3	3	3	3	6
B00C3M2								2	2	3	3	3	3	6
B00C4M2								3	3	3	3	3	3	6
B00C5M2								2	3	3	3	3	3	6



MANEUVER UNIT	TP													# of TPs
	0	1	2	3	4	5	6	7	8	9	10	11	12	
B00C6M2								3	3	3	3	3	3	6
B00CAH2						1	2	6	6	4	6	6	6	8
B00CBH2						1	1	6	6	4	6	6	6	8
B00CCH2								6	6	4	5	6	6	6
B20000H	6	6	6	6	6	6	6	6	6	6	6	6	6	13
B20020H				1	1	1	1	1	1	1	1	1	1	10
B200AH2			1	1	1	2	2	2	3	2	2	4	5	11
B200BH2		1	2	1	1	2	2	3	3	3	3	3	4	12
B200CH2	1	1	2	2	2	2	2	3	4	3	3	5	4	13
B200DH2	3	3	3	4	5	5	5	5	5	5	5	5	5	13
B200EH2	2	2	2	3	4	4	4	5	5	5	4	4	4	13
B200FH2				3	2	2	2	3	3	4	4	3	3	10
B200GM2		1	1	1	1	1	1	3	3	4	4	4	4	12
B200JH2	1	1	1	1	1	1	1	1	1	1	1	1	1	13
B200KH2	1	1	1	1	1	1	1	1	1	1	1	1	1	13
B200LH2												1	1	2
B2011DC										1	1	1	1	4
B2011MX	1	1	1	1	1	1	1	1	1	1	1	1	1	13
B2012MX	1	1	1	1	1	1	1	1	1	1	1	2	1	13
B201FA1													1	1
B201JA1								1	1	1	1	1		5
B2023MX	1	1	1	1	1	1	1	1	1	1	1	1	1	13
B2031DC								1	1	1	1	1	1	6
B2031MX	1	1	1	1	1	1	1	1	1	1	1	1	1	13
B2032MX	1	1	1	1	1	1	1	1	1	1	1	1	1	13
B20G00H	1	1	1	1	1	1	1	1	4	4	4	4	3	13
B20S00H	1	1	1	1	1	1	1	1	1	1	1	1	1	13
B2132MX	3	3	3	3	3	3	3	3	3	3				10
B2232MX	3	3	3	3	3	3	3	3	3	3	3	4	4	13

**"At Risk" Units, Class V Risk**  
Table L-31

(d) Observations.

- 1) There were several occurrences of zero balance on hand for the 155MM munition type; however, at no time were all 155MM sub-munition categories at zero balance.
- 2) 3rd Bn 1st Bde CORPS Arty and 1st Bn 2nd Bde CORPS Arty expended all of their ATACMS munition type in TP 5 through the end of the scenario. There was an insufficient quantity of ATACMS munition type available by the end of the scenario.
- 3) For the MLRS munition type, the ER-MLRS sub-munition had a few occurrences of zero balance; however, at no time were all MLRS sub-munition categories at zero balance.

# APPENDIX A

DDA VIC Name to Unit Name Cross Reference

VIC Name	Unit Name
B000000	10th CORPS
B00RCSB	10 CORPS REAR
B00FCSB	10 CORPS FWD
B003IA1	AVENGER PLT
B003JA1	AVENGER PLT
B003KA1	AVENGER PLT
B003LA1	AVENGER PLT
B003MA1	AVENGER PLT
B003NA1	AVENGER PLT
B000PAT	PATRIOT BATTALION HQ
B001PAT	A BTRY PATRIOT BN
B002PAT	B BTRY PATRIOT BN
B003PAT	C BTRY PATRIOT BN
B004PAT	D BTRY PATRIOT BN
B005PAT	E BTRY PATRIOT BN
B001USF	1ST US SOF TEAM ODA 171
B002USF	2ND US SOF TEAM ODA 172
B003USF	3RD US SOF TEAM ODA 173
B004USF	4TH US SOF TEAM ODA 174
B005RSF	5TH SOF TEAM
B006RSF	6TH SOF TEAM
B007RSF	7TH SOF TEAM
B008RSF	8TH SOF TEAM
B009RSF	9TH SOF TEAM
B010RSF	10TH SOF TEAM
B001CSA	1ST CORPS SUPPLY AREA 551ST AMMO GS
B001ASP	AMMO SUPPLY POINT
B002ASP	AMMO SUPPLY POINT
B003ASP	AMMO SUPPLY POINT (SUPPORTING 52TH)
B004ASP	AMMO SUPPLY POINT (ARTY ASP)
B001POL	CORPS SUPPORT AREA (POL)
B001CSB	CORPS SUPPORT BN FORWARD (POL)
B001SUP	CORPS SUPPLY AREA (SUB)
B002SUP	CORPS SUPPORT BN FORWARD (SUB)
B0001EN	EN CO
B0002EN	EN CO
B0003EN	EN CO
B0004EN	EN CO
B0005EN	EN CO
B0006EN	EN CO
B0007EN	EN CO
B0008EN	EN CO
B00A002	68TH FA BDE X CORPS HQ
B00A1M2	A BTY 1ST BN 1ST BDE X CORPS ARTY
B00A2M2	B BTY 1ST BN 1ST BDE X CORPS ARTY
B00A3M2	C BTY 1ST BN 1ST BDE X CORPS ARTY
B00A4M2	A BTY 2ND BN 1ST BDE X CORPS ARTY

VIC Name	Unit Name
B00A5M2	B BTY 2ND BN 1ST BDE X CORPS ARTY
B00A6M2	C BTY 2ND BN 1ST BDE X CORPS ARTY
B00A7M2	A BTY 3RD BN 1ST BDE X CORPS ARTY
B00A8M2	B BTY 3RD BN 1ST BDE X CORPS ARTY
B00A9M2	C BTY 3RD BN 1ST BDE X CORPS ARTY
B00AAH2	A BTY 4TH BN 1ST BDE X CORPS ARTY
B00ABH2	B BTY 4TH BN 1ST BDE X CORPS ARTY
B00ACH2	C BTY 4TH BN 1ST BDE X CORPS ARTY
B00B002	67TH FA BDE X CORPS ARTY HQ
B00B1M2	A BTY 1ST BN 2ND BDE X CORPS ARTY
B00B2M2	B BTY 1ST BN 2ND BDE X CORPS ARTY
B00B3M2	C BTY 1ST BN 2ND BDE X CORPS ARTY
B00B4M2	A BTY 2ND BN 2ND BDE X CORPS ARTY
B00B5M2	B BTY 2ND BN 2ND BDE X CORPS ARTY
B00B6M2	C BTY 2ND BN 2ND BDE X CORPS ARTY
B00BAH2	A BTY 3RD BN 2ND BDE X CORPS ARTY
B00BBH2	B BTY 3RD BN 2ND BDE X CORPS ARTY
B00BCH2	C BTY 3RD BN 2ND BDE X CORPS ARTY
B00C002	3RD FA BDE X CORPS ARTY HQ
B00C1M2	A BTY 1ST BN 3RD BDE X CORPS ARTY
B00C2M2	B BTY 1ST BN 3RD BDE X CORPS ARTY
B00C3M2	C BTY 1ST BN 3RD BDE X CORPS ARTY
B00C4M2	A BTY 2ND BN 3RD BDE X CORPS ARTY
B00C5M2	B BTY 2ND BN 3RD BDE X CORPS ARTY
B00C6M2	C BTY 2ND BN 3RD BDE X CORPS ARTY
B00CAH2	A BTY 4TH BN 3RD BDE X CORPS ARTY
B00CBH2	B BTY 4TH BN 3RD BDE X CORPS ARTY
B00CCH2	C BTY 4TH BN 3RD BDE X CORPS ARTY
B00A00H	1 BN GS BDE X CORPS AVN
B00G00H	1 BN 1 ATK BDE X CORPS AVN
B00H00H	2 BN 1 ATK BDE X CORPS AVN
B2000AR	EXFOR DIVISION
B200DSA	EXFOR DISCOM
B201GA1	AVENGER PLT
B201LA1	AVENGER PLT
B2000EN	ENGINEER GROUP
B2010EN	A CO, ENGINEER GROUP
B2020EN	B CO, ENGINEER GROUP
B2030EN	C CO, ENGINEER GROUP
B2040EN	D CO, ENGINEER GROUP
B2050EN	E CO, ENGINEER GROUP
B2060EN	F CO, ENGINEER GROUP
B2070EN	AVN DS, ENGINEER GROUP
B2080EN	DIV GS, ENGINEER GROUP
B011RSF	10TH SOF TEAM
B012RSF	10TH SOF TEAM
B013RSF	10TH SOF TEAM
B014RSF	10TH SOF TEAM
B2010MX	1 BDE EXFOR (AR)



VIC Name	Unit Name
B2011DC	1 BDE RECON CO
B2011MX	TF 1-1 MX
B2011FC	FORWARD SUPPORT COMPANY
B2022AR	TF 2-2 AR
B2022FC	FORWARD SUPPORT COMPANY
B2013AR	TF 1-3 AR
B2013FC	FORWARD SUPPORT COMPANY
B2014AR	TF 1-4 AR
B2014FC	FORWARD SUPPORT COMPANY
B201FSB	FSB 1 BDE EXFOR (MX)
B201AA1	BSFV PLT
B201JA1	BSFV PLT
B201KA1	AVENGER PLT
B2020MX	2 BDE EXFOR (AR)
B2021DC	2 BDE RECON CO
B2021AR	TF 2-1 AR
B2021FC	FORWARD SUPPORT COMPANY
B2012MX	TF 1-2 MX
B2012FC	FORWARD SUPPORT COMPANY
B2023MX	TF 2-3 MX
B2023FC	FORWARD SUPPORT COMPANY
B2024MX	TF 2-4 MX
B2024FC	FORWARD SUPPORT COMPANY
B201CA1	BSFV PLT
B201EA1	BSFV PLT
B201DA1	AVENGER PLT
B202FSB	FSB 2 BDE EXFOR (AR)
B2030AV	AVIATION BDE
B2030DC	CAV SQDRN
B2031DC	A TRP
B2032DC	B TRP
B2033DC	C TRP
B20300H	FARP
B203G0H	CAV SQD GRD/AIR RECON
B203R0H	DIVISION AIR RECON
B203A0H	ATTACK BN
B203U0H	LIFT BN
B2030IN	INFANTRY BN HQ
B2030FC	
B2031IN	Air Aslt Plt
B2032IN	Air Aslt Plt
B2033IN	Air Aslt Plt
B2034IN	Air Aslt Plt
B2035IN	Air Aslt Plt
B2036IN	Air Aslt Plt
B2037IN	Air Aslt Plt
B2038IN	Air Aslt Plt
B2039IN	Air Aslt Plt
B201HA1	AVENGER PLT

VIC Name	Unit Name
B201FA1	AVENGER PLT
B201BA1	AVENGER PLT
B20DASB	AVIATION SUPPORT
B200002	DIVARTY EXFOR
B201IA1	AVENGER PLT
B200AH2	1 BN-A 155SP BTRY EXFOR DIVARTY
B200BH2	1 BN-B 155SP BTRY EXFOR DIVARTY
B200CH2	1 BN-C 155SP BTRY EXFOR DIVARTY
B200DH2	2 BN-A 155SP BTRY EXFOR DIVARTY
B200EH2	2 BN-B 155SP BTRY EXFOR DIVARTY
B200FH2	2 BN-C 155SP BTRY EXFOR DIVARTY
B200GM2	4 BN-A MLRS BTY EXFOR DIVARTY
B200HM2	4 BN-B MLRS BTY EXFOR DIVARTY
B200IM2	4 BN-B MLRS BTY EXFOR DIVARTY

APPENDIX B

DEFINITIONS

Specific supply analysis definitions are listed below:

(1) Amount Authorized of this supply type: Amount of this supply type that this unit is authorized at the end of the TP, this number is calculated by multiplying the number of available systems that use this supply type by the amount authorized per system. This number can change from one TP to another due to weapon losses.

(2) Balance on-Hand of this supply type: Amount of this supply type that this unit has on hand at the end of the TP.

(3) Amount Used during this TP: Amount of this supply type that this unit used during this TP.

(4) Amount Lost during this TP: Amount of this supply type that this unit lost due to attrition of systems (when a system is damaged in combat a percentage (50%) of its on-board supplies are lost).

(5) Ratio of Balance on-Hand to Amount Authorized: A percent value used to indicate overall assessment of a munition; when this percent value is low, a greater risk is indicated as to possibility of exhausting all supplies.

(6) Total Amount Authorized during this TP: The sum of each amount authorized of each supply type at the end of the TP. The stockages are redistributed, consumed, or lost as the scenario proceeds. As units are engaged and attrited, the amount-authorized is reconciled with the number of surviving weapon systems.

(7) Total Amount on-Hand during this TP: The sum of the amount of each supply type that the units actually have in stock at the end of the TP. This amount is reduced by consumption, attrition, and other activities that may reduce the stockage of a supply type.

(8) Total Amount Used during this TP: The sum of the amount of each supply type consumed as a result of movement and combat at the of the TP.

(9) Total Amount Lost during this TP: The sum of the amount of each supply type lost due to attrition of systems at the end of the TP (when a system is damaged in combat, a percentage of its on-board supplies are lost).

(10) Total Amount on-Order during this TP: The sum of the amounts of each supply ordered by each unit during a period. As materiel is consumed, units initiate orders based on a re-order threshold to restock its supplies. If an order cannot be shipped for reasons of shortages of stocks or movers, a unit will re-order the replenishments during the next period.

(11) Timely fashion: The manner in which a unit is supported when a negative consequence did not result. When a maneuver unit calls for replenishment of supplies, the support of the maneuver unit shall be said to be in a "timely fashion," if the maneuver unit did not suffer for lack of supplies. For class III, a unit suffers when it is forced to stop for lack of class III. For class V, a unit suffers a negative consequence when it exhausts a class V supply type.

(12) Risk: The proportion of TPs that each supply type for each unit can be expected to last given the greatest consumption for the scenario.

The higher the measure, the greater the quantity of stockage, hence the lower the likelihood of not being able to repeat the highest consumption of a TP.

(13) Standard Resupply: Maneuver units will generate an order for a supply type when, per the resupply schedule, the on-hand plus on-order quantity is less than 75 percent of the authorized quantity. The magnitude of the order is the amount of each supply type to bring the on-hand plus on-order quantity up to the authorized quantity. Routinely, the order is for 25% of authorized. When the shipment arrives, the on-hand balance will increase, and the maneuver unit will issue an order when the on-hand quantity again falls below the 75% authorized. Exceptions to this resupply process occur when, for lack of trucks or stocks, an order cannot be filled or shipped. When the order (or portion of same) cannot be shipped in the period it was requested, the unfilled portion is lost - there are no backorders or due-outs. The maneuver unit will reassess its needs during the next period. Standard resupply can be divided into two types: supply point distribution (SPD) and unit distribution (UD). A unit that uses SPD provides its own organic transporters to convey replenishments between the supply unit(s) and itself; a unit using UD requires the supply unit to provide both replenishments and transporters.

(14) Emergency Resupply: Maneuver units will generate an "emergency" order for a supply type when, per the resupply schedule, the on-hand plus on-order quantity is less than 50 percent of the authorized quantity. The magnitude of the order is the amount of each supply type to bring the on-hand quantity up to 50% of the authorized quantity. When the shipment arrives, the on-hand balance will increase. This is "emergency resupply." Emergency resupply is subject to a number of factors: (1) the availability of replenishment stockages; (2) the availability of helicopter support to provide airlift between the supporting CSS unit(s) and the requesting maneuver unit; and (3) the hostile environment surrounding the maneuver unit. If the scenario is short-lived or has intensive combat, the last factor can be the most limiting. Helicopters will not provide lift to maneuver units that are under assault. If any one of the factors prohibits emergency resupply, the "emergency" request for replenishments will be routed for "standard" resupply. When the order (or portion of same) cannot be shipped in the time period it was requested, the unfilled portion is lost - there are no backorders or due-outs - the unit must wait for the next period per the resupply schedule to assess its stockage position and re-order.

# APPENDIX C

## FIGURES AND TABLES

Unit Name	Amount Shipped	# of Deliveries	Minimum Time to Deliver	Avg Time to Deliver	Maximum Time to Deliver
B001CSB	134,994.93	76	1.58	4.25	8.1
B001POL	28,601.27	8	2.16	3.19	8.69
B200AFC	20,000.03	13	0.76	1.82	5
B200BFC	20,254.52	14	0.71	2.97	5.33
B200CFC	22,651.62	14	1.81	5.69	8.79
B2011FC	23,849.38	3	1.73	3.96	6.05
B2012FC	32,979.09	4	2.04	4.46	8.7
B2013FC	35,530.18	3	4.49	6.76	9.6
B201FSB	7,744.49	5	2.53	3.99	5.68
B2021FC	35,807.83	3	5.98	7.2	8.98
B2022FC	35,272.75	3	5.45	6.76	8.35
B2023FC	24,023.9	3	2.6	4.66	7.02
B202FSB	11,145.05	7	1.75	4.59	10
B2031FC	30,666.43	4	2.67	4.45	6.75
B2032FC	22,093.33	11	1.74	5.49	9.4
B2033FC	36,123.9	3	4.6	6.06	7.65
B203FSB	7,979.35	5	1.63	5.16	9.48
B20DASB	9,631.82	10	2.45	5.12	8.3
B2LAVSC	40,453.3	6	1	2.11	3.48
B2UAVSC	9,531.74	1	1.16	1.16	1.16

Unit Name	Amount Shipped	# of Non-Deliveries	Minimum Time to Deliver	Avg Time to Deliver	Maximum Time to Deliver
B001CSB	30,486.08	8	1.5	5.28	8
B001POL	2,500	1	2	2	2
B200BFC	2,226.46	1	2	2	2
B201FSB	1,615.18	1	6	6	6
B203FSB	2,840.98	2	2	4.5	7

Order to Deliver, Class III (GALS)  
Table C-1

Unit Name	Amount Shipped	# of Deliveries	Minimum Time to Deliver	Avg Time to Deliver	Maximum Time to Deliver
B001CSA	1,102.07	94	5.01	8.38	16.3
B200AFC	270.01	49	0.44	1.83	4.73
B200BFC	319.44	57	0.39	1.51	5.3
B200CFC	7.15	4	2.03	3.18	6.31
B2011FC	16.08	8	1.27	2.47	3.9
B2012FC	2.52	2	1.6	2.76	3.92
B201FSB	0.02	1	2.17	2.17	2.17
B2032FC	1.22	3	4.73	6.09	8.33
B2LAVSC	15.48	14	1.31	2.53	3.41
B2UAVSC	36.05	6	1.32	2.06	7.54

Unit Name	Amount Shipped	# of Non-Deliveries	Minimum Time to Deliver	Avg Time to Deliver	Maximum Time to Deliver
B001CSA	558.22	28	0	6.64	14.47
B200AFC	12.38	3	0.75	1.08	1.75
B2013FC	4.5	3	2	2	2
B2023FC	0.68	1	2	2	2

Order to Deliver, Class V (STONS)  
Table C-2

TP	USED GALS	LOST GALS	REQUIREMENT CONSUMED	AMOUNT RECEIVED BY AIR	AMOUNT RECEIVED BY TRUCK	AMOUNT REQUESTED	AMOUNT SHIPPED	% of ORDERED
0	0	0	0	0	0	0	0	---
1	118,099	25	118,124	0	8,261	26,219	26,219	100
2	100,934	0	100,934	0	21,718	101,709	101,709	100
3	88,957	0	88,957	0	45,253	86,296	76,474	89
4	105,923	0	105,923	0	73,418	79,546	58,464	73
5	86,869	1,402	88,271	0	102,150	61,174	56,236	92
6	98,638	1,568	100,207	0	30,542	111,314	87,964	79
7	74,871	5,508	80,379	0	83,308	98,389	92,712	94
8	30,251	2,514	32,765	0	98,321	7,592	4,538	60
9	30,055	4,652	34,707	0	20,687	25,372	16,458	65
10	61,964	230	62,194	0	6,953	67,722	60,413	89
11	26,532	364	26,896	0	41,019	38,821	32,147	83
12	18,958	31	18,989	0	37,046	21,040	15,670	74
TOTAL	842,052	16,294	858,346	0	568,676	725,194	629,004	87

Consumption of Class III, Gallons  
Table C-3

TP	USED STONS	LOST STONS	REQUIREMENT CONSUMED	AMOUNT RECEIVED BY AIR	AMOUNT RECEIVED BY TRUCK	AMOUNT REQUESTED	AMOUNT SHIPPED	% of ORDERED
0	0	0	0	0	0	0	0	---
1	1,367	0	1,367	0	14	316	293	93
2	919	0	919	0	86	212	205	97
3	280	0	280	0	376	313	304	87
4	130	0	130	0	404	188	122	87
5	432	19	451	0	36	69	69	100
6	42	36	79	0	15	37	32	86
7	1,374	29	1,403	0	94	458	454	99
8	909	64	974	0	67	320	320	100
9	543	21	564	0	273	281	274	98
10	277	1	278	0	126	96	82	85
11	1,496	6	1,502	0	311	401	392	98
12	578	1	579	0	230	158	158	100
TOTAL	8,348	178	8,526	0	2,032	2,849	2,705	95

Consumption of Class V, STONS  
Table C-4

TP	USED GALS	LOST GALS	REQUIREMENT CONSUMED	AMOUNT RECEIVED BY AIR	AMOUNT RECEIVED BY TRUCK	AMOUNT REQUESTED	AMOUNT SHIPPED	% of ORDERED
0	0	0	0	0	0	0	0	---
1	91,153	25	91,179	0	8,261	26,219	26,219	100
2	77,529	0	77,529	0	21,718	69,613	69,613	100
3	70,184	0	70,184	0	20,693	80,907	73,976	91
4	74,827	0	74,827	0	61,821	41,499	23,407	56
5	61,080	1,072	62,152	0	68,656	61,174	56,236	92
6	67,638	499	68,137	0	28,048	73,222	52,666	72
7	53,249	1,070	54,318	0	61,632	79,876	77,146	97
8	17,113	1,148	18,261	0	82,755	2,044	2,044	100
9	18,068	4,314	22,382	0	18,193	8,777	3,015	34
10	40,918	220	41,138	0	3,001	36,015	28,706	80
11	13,664	272	13,936	0	25,653	20,418	17,036	83
12	7,672	0	7,672	0	15,776	5,900	3,953	67
TOTAL	593,095	8,620	601,715	0	416,206	505,666	434,018	86

Consumption of Class III, Gallons (Brigadist)  
Table C-5

TP	USED STONS	LOST STONS	REQUIREMENT CONSUMED	AMOUNT RECEIVED BY AIR	AMOUNT RECEIVED BY TRUCK	AMOUNT REQUESTED	AMOUNT SHIPPED	% of ORDERED
0	0	0	0	0	0	0	0	---
1	84	0	84	0	14	54	31	57
2	165	0	165	0	70	70	63	90
3	201	0	201	0	87	203	194	96
4	88	0	88	0	194	188	122	65
5	39	16	56	0	36	57	57	100
6	15	11	25	0	15	13	8	62
7	237	17	254	0	82	122	118	97
8	162	49	212	0	67	61	61	100
9	202	21	222	0	137	131	124	95
10	135	1	136	0	77	89	75	84
11	242	5	246	0	132	133	124	93
12	32	0	32	0	20	28	28	100
TOTAL	1,602	119	1,721	0	931	1,150	1,004	87

Consumption of Class V, STONS (Brigadist)  
Table C-6



TP	USED GALS	LOST GALS	REQUIREMENT CONSUMED	AMOUNT RECEIVED BY AIR	AMOUNT RECEIVED BY TRUCK	AMOUNT REQUESTED	AMOUNT SHIPPED	% of ORDERED
0	0	0	0	0	0	0	0	---
1	26,946	0	26,946	0	0	0	0	---
2	23,405	0	23,405	0	0	32,096	32,096	100
3	18,773	0	18,773	0	24,560	5,389	2,498	46
4	31,096	0	31,096	0	11,597	38,047	35,057	92
5	25,789	330	26,119	0	33,494	0	0	---
6	31,001	1,069	32,070	0	2,494	38,092	35,298	93
7	21,622	4,438	26,060	0	21,676	18,513	15,566	84
8	13,138	1,366	14,504	0	15,566	5,548	2,494	45
9	11,987	339	12,325	0	2,494	16,595	13,443	81
10	21,045	10	21,055	0	3,952	31,707	31,707	100
11	12,868	92	12,960	0	15,366	18,403	15,111	82
12	11,286	31	11,317	0	21,270	15,140	11,717	77
TOTAL	248,957	7,674	256,631	0	152,468	219,531	194,986	89

Consumption of Class III, Gallons (Corps)  
Table C-7

TP	USED STONS	LOST STONS	REQUIREMENT CONSUMED	AMOUNT RECEIVED BY AIR	AMOUNT RECEIVED BY TRUCK	AMOUNT REQUESTED	AMOUNT SHIPPED	% of ORDERED
0	0	0	0	0	0	0	0	---
1	1,283	0	1,283	0	0	262	262	100
2	753	0	753	0	16	142	142	100
3	79	0	79	0	289	110	110	100
4	43	0	43	0	210	0	0	---
5	392	2	395	0	0	12	12	100
6	28	26	53	0	0	24	24	100
7	1,136	13	1,149	0	12	336	336	100
8	747	15	762	0	0	259	259	100
9	341	1	342	0	136	150	150	100
10	142	0	142	0	49	7	7	100
11	1,255	1	1,256	0	179	268	268	100
12	546	1	547	0	210	130	130	100
TOTAL	6,746	59	6,805	0	1,100	1,700	1,700	100

Consumption of Class V, STONS (Corps)  
Table C-8



CLASS III & CLASS V, TRUCKLOADS BY TP																					
TP	2.75RKT	25MM	5.56MM	B20MM	B30MM	ER-MLRS	HELIFIRE	LONGBOW	MI07(CB)	M26	M483AI	M549AI	M795	M864	M929	PGMM	POL-B	STAFF	STINGER	XM982	TOTAL
1				0.2	0.8	12.1		7.1	0.8		0.5	0.1					10.5			0.5	32.6
2				0.4	0.8	12.1		4.8	2	4	1.7	0.9	0.6	0.4		0.3	34.3			0.5	62.8
3			0			12.1		2.9	4	9.5	2.5	1.4	1.2	0.4		0.1	42.8			0.2	77.1
4			0					2.9	3.9	9.5	2.7	2	1	1.6			53.8			0.6	78
5			0						2.1		0.4	0.4		0.6		0	47				50.5
6			0	0.1	0.5			4.9	1.8		0.4			0.1		0	41				48.8
7			0	0.1	0.5	5		7.5	1.7	5.4	1.5	1.4		3.1		0.1	51.8		0.1	1.2	82.1
8	0.5		0	0.1	0.5	5	0.3	7.5	0.7	18.3	2.9	1.4		1.6		0.1	33.5		0.3	1.2	75.5
9	1		0			5	0.8	2.6	2.6	25.6	3.9	0.8		1.1			12.8	0.1	0.3	1.5	60.2
10	0.7		0			1.3	0.7	10	2.5	25.6	0.7		0.2	0.6			20.3	0.1	0.2	1.2	65.5
11		0.8	0				0	7.4	1.7	38.8	0.4	0.7	0.2	1	0.8	0.3	24.5	0.2	0.6	1.6	81
12		0.4	0					0.5		36.9	0.2	0.4		0.6	0.8	0.4	19.3	0.5	1.3	1.1	62.4

CLASS III & V, PERCENTAGE BY TP																						
TP	2.75RKT	25MM	5.56MM	B20MM	B30MM	ER-MLRS	HELIFIRE	LONGBOW	MI07(CB)	M26	M483A1	M549A1	M795	M864	M929	PGMM	POL-B	STAFF	STINGER	XM982	TOTAL	
1	0	0	0	0.61	2.45	37.12	0	21.78	2.45	0	1.53	0.31	0	0	0	0	32.21	0	0	1.53	100	
2	0	0	0	0.64	1.27	19.27	0	7.64	3.18	6.37	2.71	1.43	0.96	0.64	0	0.48	54.62	0	0	0.8	100	
3	0	0	0	0	0	15.69	0	3.76	5.19	12.32	3.24	1.82	1.56	0.52	0	0.13	55.51	0	0	0.26	100	
4	0	0	0	0	0	0	0	3.72	5	12.18	3.46	2.56	1.28	2.05	0	0	68.97	0	0	0.77	100	
5	0	0	0	0	0	0	0	0	4.16	0	0.79	0.79	0	1.19	0	0	93.07	0	0	0	100	
6	0	0	0	0.2	1.02	0	0	10.04	3.69	0	0.82	0	0	0.2	0	0	84.02	0	0	0	100	
7	0	0	0	0.12	0.61	6.09	0	9.14	2.07	6.58	1.83	1.71	0	3.78	0	0.12	63.09	0	0.12	1.46	3.29	100
8	0.66	0	0	0.13	0.66	6.62	0.4	9.93	0.93	24.24	3.84	1.85	0	2.12	0	0.13	44.37	0	0.4	1.59	2.12	100
9	1.66	0	0	0	0	8.31	1.33	4.32	4.32	42.52	6.48	1.33	0	1.83	0	0	21.26	0.17	0.5	2.49	3.49	100
10	1.07	0	0	0	0	1.98	1.07	15.27	3.82	39.08	1.07	0	0.31	0.92	0	0	30.99	0.15	0.31	1.83	2.14	100
11	0	0.99	0	0	0	0	0	9.14	2.1	47.9	0.49	0.86	0.25	1.23	0.99	0.37	30.25	0.25	0.74	1.98	2.47	100
12	0	0.64	0	0	0	0	0	0.8	0	59.13	0.32	0.64	0	0.96	1.28	0.64	30.93	0.8	2.08	0	1.76	100

Truckloads On-Road, CSS-to-Maneuver Units

Table C-9

Truckloads On-Road, CSS-to-Maneuver Units  
Table C-9

CLASS III, AMOUNT ON-HAND BY UNIT BY HOUR														
HOUR	B001CSA	B001CSB	B001POL	B001SUP	B00FCSB	B00FCSE	B200AFC	B200BFC	B200GFC	B201LFC	B2012FC	B2013FC	B201FSB	B2021FC
0	12,500	720,000	3,100,000	12,600	2,500	385,500	20,000	20,000	20,000	15,000	15,000	25,000	225,000	25,000
1	12,500	720,000	3,100,000	12,600	2,500	385,500	20,000	20,000	20,000	15,000	15,000	25,000	225,000	25,000
2	12,500	720,000	3,100,000	12,600	2,500	385,500	20,000	20,000	20,000	15,000	15,000	25,000	225,000	25,000
3	12,500	720,000	3,100,000	12,600	2,500	385,500	20,000	20,000	20,000	15,000	15,000	25,000	225,000	25,000
4	12,500	720,000	3,099,630.5	12,600	2,500	385,500	20,000	20,000	20,000	15,000	15,000	25,000	225,000	25,000
5	12,500	720,000	3,099,630.5	12,600	2,500	385,500	20,000	20,000	20,000	15,000	15,000	25,000	225,000	25,000
6	12,500	718,514.8	3,098,700	12,600	2,500	385,500	16,889.4	14,810.3	14,823.7	15,000	15,000	25,000	225,000	25,000
7	12,500	701,103	3,097,666	12,600	2,500	385,500	15,073.5	14,810.3	14,823.7	15,000	15,000	25,000	225,000	25,000
8	12,500	687,903.7	3,097,562.5	12,600	2,500	385,500	15,073.5	14,810.3	14,823.7	15,000	15,000	25,000	225,000	25,000
9	12,500	687,903.7	3,051,860.5	12,600	2,500	385,500	15,073.5	14,810.3	14,823.7	15,000	15,000	25,000	225,000	25,000
10	6,694	687,903.7	3,051,348.5	12,600	2,500	385,500	15,073.5	14,810.3	14,823.7	15,000	15,000	25,000	225,000	25,000
11	6,694	687,903.7	3,047,923.3	12,600	2,500	385,500	15,073.5	14,810.3	14,823.7	15,000	15,000	25,000	225,000	25,000
12	6,694	687,903.7	3,047,364.7	12,600	2,500	385,500	15,073.5	14,810.3	14,823.7	15,000	15,000	25,000	225,000	25,000
13	6,694	686,340.2	3,047,619	12,600	2,500	385,500	15,073.5	14,810.3	14,823.7	15,000	15,000	25,000	225,000	25,000
14	6,694	686,703.1	3,070,563.3	12,600	2,500	385,500	11,610.8	11,569.2	9,967.9	5,485.7	5,096.8	12,351.6	221,781.8	13,183.4
15	6,694	655,345.4	3,068,497.3	12,600	2,500	385,500	11,610.8	9,752.3	9,967.9	5,485.7	5,096.8	12,351.6	221,781.8	13,183.4
16	6,694	655,345.4	3,068,928.5	12,600	2,500	385,500	9,847.3	9,752.3	9,967.9	5,485.7	5,096.8	12,351.6	203,440.7	13,183.4
17	12,405.5	655,345.4	3,068,874.3	12,600	2,500	385,500	9,847.3	9,752.3	9,967.9	5,485.7	5,096.8	12,351.6	203,440.7	13,183.4
18	6,590.3	655,345.4	3,068,962.2	12,600	2,500	385,500	9,847.3	9,752.3	9,967.9	5,485.7	5,096.8	12,351.6	203,440.7	13,183.4
19	6,590.3	655,345.4	3,068,962.2	12,600	2,500	385,500	9,847.3	9,752.3	9,967.9	5,485.7	5,096.8	12,351.6	203,440.7	13,183.4
20	6,590.3	655,345.4	3,069,080.8	12,600	2,500	385,500	8,196.6	6,460.5	4,900.2	14,335	5,096.8	12,351.6	201,891.2	653.3
21	10,258	655,345.4	3,066,400.3	12,600	2,500	385,500	4,800	4,779.3	4,900.2	14,335	5,096.8	12,351.6	209,710.1	653.3
22	4,457.1	655,345.4	3,066,179.8	12,600	2,500	385,500	4,800	4,779.3	4,900.2	14,335	5,096.8	12,351.6	190,539.2	653.3
23	4,457.1	641,924.3	3,054,968	12,600	2,500	385,500	4,800	4,779.3	4,900.2	14,335	5,096.8	12,351.6	190,539.2	653.3
24	6,574.1	633,669.9	3,055,147.8	12,600	2,500	385,500	3,272.6	4,779.3	4,900.2	14,335	5,096.8	12,351.6	167,258.6	653.3
25	6,574.1	588,152.7	3,037,952	12,600	2,500	385,500	3,272.6	3,189.2	212.8	14,335	5,096.8	12,351.6	165,731.7	13,530.3
26	6,574.1	588,152.7	3,035,176.8	12,600	2,500	385,500	84.8	53.7	212.8	14,335	5,096.8	12,351.6	165,731.7	13,530.3
27	12,307.7	588,152.7	3,034,310.5	12,600	2,500	385,500	84.8	53.7	212.8	14,335	5,096.8	12,351.6	165,731.7	13,530.3
28	6,528.8	586,717.6	3,034,150.3	12,600	2,500	385,500	84.8	53.7	134.7	6,969.6	0	1,490.7	146,545.8	2,069.1
29	6,528.8	586,717.6	3,034,116.8	12,600	2,500	385,500	84.8	53.7	158.1	6,969.6	0	1,490.7	146,545.8	2,069.1
30	6,528.8	586,717.6	3,033,946.3	12,600	2,500	385,500	84.8	53.7	158.1	6,969.6	0	1,490.7	146,545.8	2,069.1
31	6,528.8	595,398.6	3,031,452.3	12,600	2,500	385,500	84.8	53.7	9,490.8	6,969.6	0	12,526.9	146,545.8	2,069.1
32	6,528.8	595,398.6	3,031,514.5	12,600	2,500	385,500	84.8	53.7	9,490.8	6,969.6	0	12,526.9	146,545.8	2,069.1
33	6,528.8	595,398.6	3,030,943.5	12,600	2,500	385,500	84.8	53.7	9,490.8	6,969.6	0	12,526.9	156,167.6	2,069.1
34	6,528.8	592,550.4	3,030,481.8	12,600	2,500	385,500	84.8	53.7	9,490.8	6,969.6	0	12,526.9	156,167.6	2,069.1
35	6,528.8	594,602.3	3,030,037.8	12,600	2,500	385,500	84.8	51.5	7,961.8	6,969.6	8,891.1	12,526.9	167,852	23,375.6
36	4,405.9	592,848.2	3,027,027	12,600	2,500	385,500	84.8	51.5	7,961.8	6,969.6	8,891.1	12,526.9	167,852	23,375.6
37	4,405.9	591,137.4	3,026,898.8	12,600	2,500	385,500	84.8	51.5	7,961.8	6,969.6	8,891.1	12,526.9	167,852	22,747.2
38	4,405.9	587,884.7	3,027,005.5	12,600	2,500	385,500	84.8	0	6,626.4	6,969.6	8,891.1	12,526.9	167,852	22,747.2
39	4,405.9	582,522.8	3,027,190.5	12,600	2,500	385,500	0	0	6,626.4	0	8,891.1	506	160,374.6	22,747.2
40	9,969.5	581,141.5	3,026,756.3	12,600	2,500	385,500	0	0	6,626.4	0	8,891.1	506	136,315.9	22,747.2
41	4,225.8	552,049.1	3,023,950.5	12,600	2,500	385,500	0	0	6,626.4	0	8,891.1	506	136,315.9	22,747.2
42	4,225.8	546,932.3	3,023,740	12,600	2,500	385,500	0	0	6,626.4	0	8,891.1	506	134,700.7	22,747.2
43	4,225.8	546,932.3	3,032,607.5	12,600	2,500	385,500	0	0	6,626.4	0	8,891.1	506	134,700.7	22,747.2
44	9,925	546,932.3	3,032,584.3	12,600	2,500	385,500	0	0	6,626.4	0	0	506	115,585.5	22,747.2
45	7,976.6	529,188.6	3,014,393	12,600	2,500	385,500	0	0	6,626.4	0	0	506	115,585.5	22,747.2
46	7,976.6	523,418.6	3,012,029.3	12,600	2,500	385,500	0	0	6,626.4	0	0	506	115,585.5	22,747.2
47	7,976.6	519,972.1	3,012,029.3	12,600	2,500	385,500	0	0	6,626.4	7,853.8	0	506	115,585.5	22,747.2
48	7,976.6	519,972.1	3,012,095.5	12,600	2,500	385,500	0	0	6,626.4	7,853.8	0	506	115,585.5	22,747.2

Class III Balance for Supply Points, CSS-to-Maneuver Units  
Table C-10

